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Charles Lindbergh's Lockheed Sirius

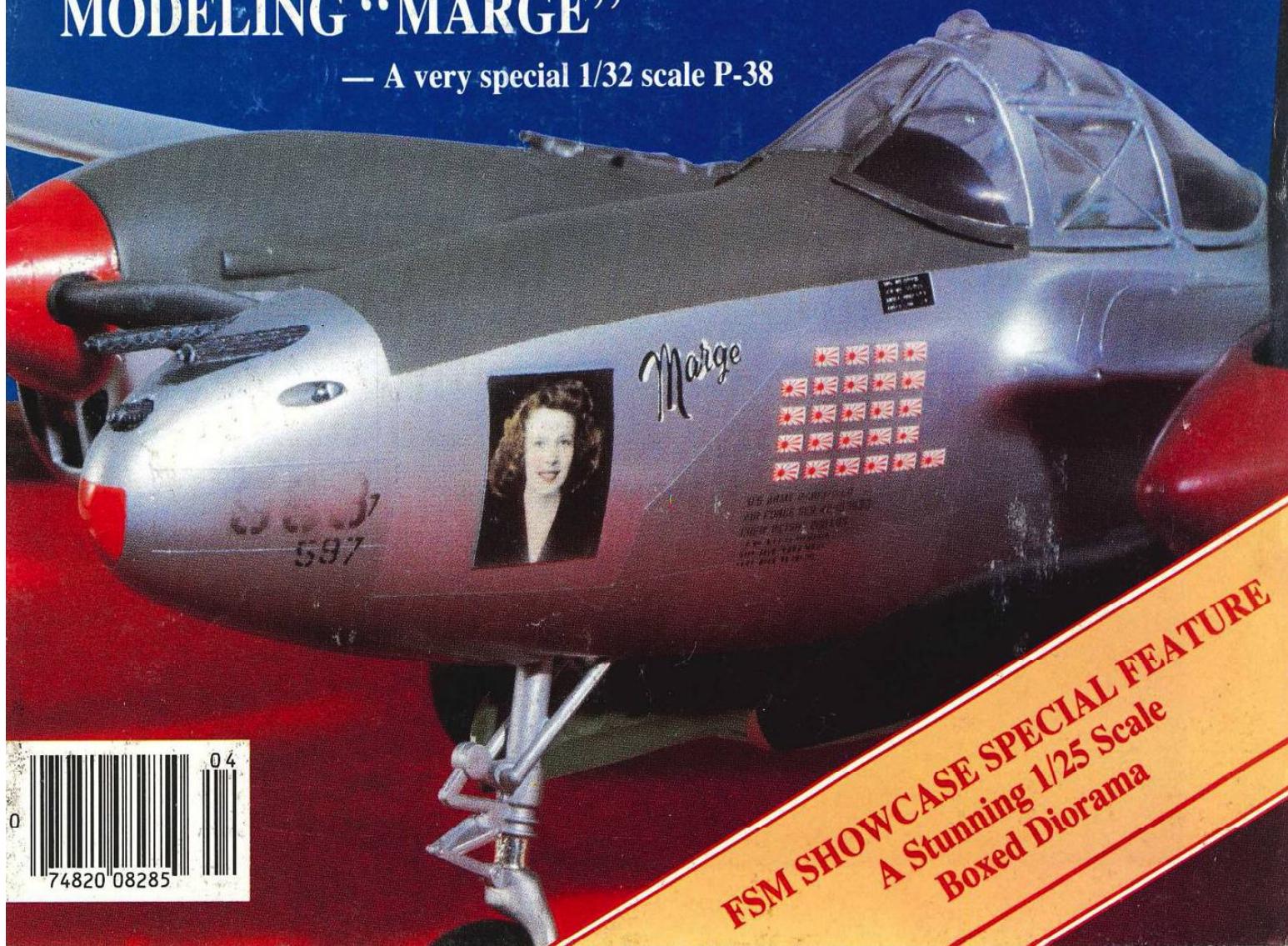
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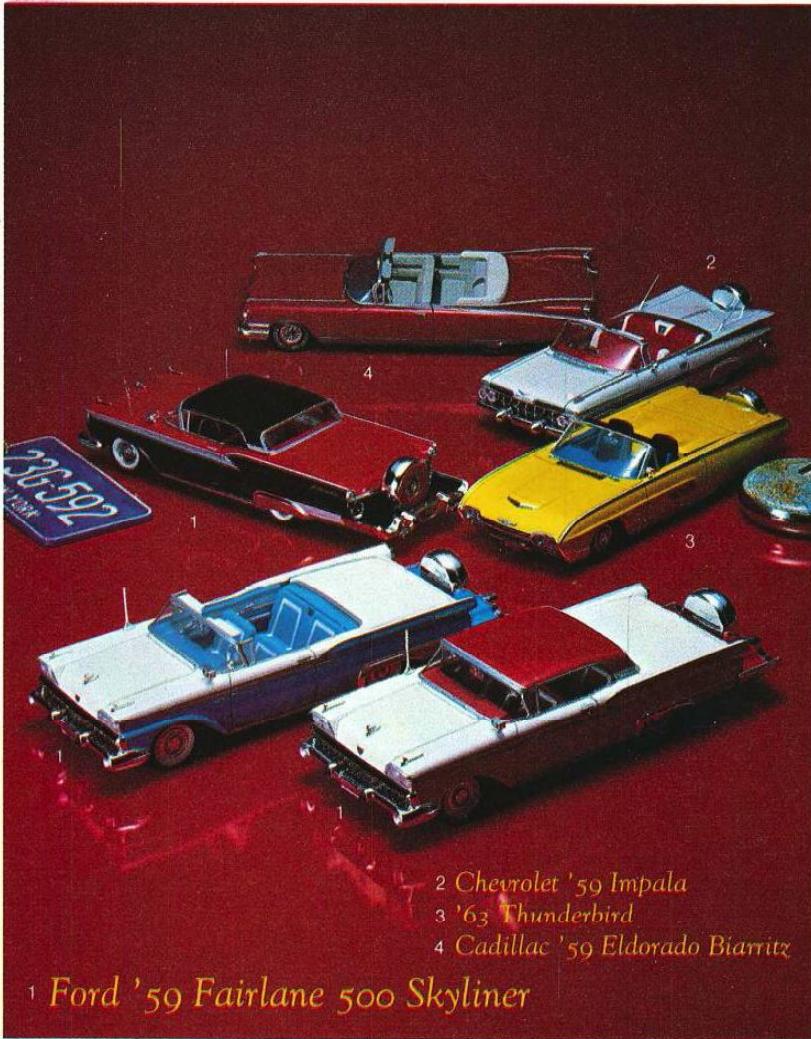


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Ford '59 Fairlane 500 Skyliner



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- 3 '63 Thunderbird
- 4 Cadillac '59 Eldorado Biarritz

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Lots of chrome and optional parts will allow you to build this model in a variety of ways. If you want the top up or down, Continental kit installed or not, this model brings you the feel of this great classic.

Ask for this exciting model kit at your favorite hobby shop and while you're there, ask to see the other 50's-60's series models pictured that are made by GUNZE SANGYO. You'll be glad you did.

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ON THE COVER

Faces — on figures and fighters — dominate our cover this time. Painting the human face is far from easy — whether it's on canvas or a miniature figure — but George DeWolfe tackles the job in step-by-step fashion in his article that begins on page 22. World War Two ace Richard Bong named his P-38 "Marge," and proudly displayed his sweetheart's face on the nose of the plane; FSM Associate Editor Paul Boyer explains the special techniques he used to model this very special portrait beginning on page 60. Photos by George DeWolfe and FSM Staff Photographer Paul A. Erler.

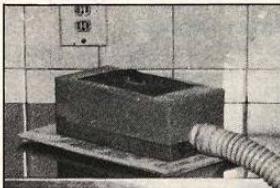


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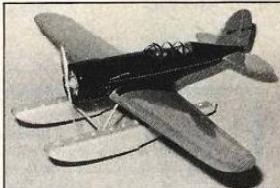
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FSM UPDATE

FSM invites manufacturers and publishers to submit news releases, photos, product samples, and new catalogs. A description of our new-product announcement and review policies is available from FSM Update, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233.

FSM index. The FSM index is included in subscribers' copies of this issue. The first 12 issues of FSM are indexed — Spring 1982 through November/December 1984. Non-subscribers can obtain a copy of the index by sending a large, stamped, self-addressed envelope to FSM Index, 1027 North Seventh Street, Milwaukee, WI 53233. Copies are available on a first-come basis while supplies last.

Kit releases. Bluejacket Shipcrafters, 93 Canal Street, Shelton, CT 06484, has introduced the *Jefferson Davis*, a plank-on-frame kit of an 1853 Baltimore Clipper-type revenue cutter in $\frac{1}{32}$ scale. The kit, No. 1051, comes with a hardwood frame set, preshaped bow and stern pieces, brass fittings, britannia pewter fittings, 96-page instruction book with 75 step-by-step construction photos, complete plans, and all wood parts needed. It sells for \$295.00.

Heller, 24, rue de Paradis, 75010 Paris, France, has added six new kits to its line: No. 302, 1/72 Lockheed F-94B Starfire; 316, 1/72 Douglas DC-6B Securite Civile; 361, 1/72 AMD Etendard IV M; 3503, 1/24 Renault G260 Turbo Bobcat; 80745, 1/24 Alpine Renault 1600; and 80750, 1/24 Porsche 908. Numbers 80745 and 80750 are part of Heller's Historic Racing Cars series.

Heritage Shipbuilders, Box 494, Lathrup Village, MI 48076, has announced the release of an 1891 whaleback steamer kit, the *Washburn*. The scale is $\frac{1}{64}$ scale = 1'. It is 25" long, 3" wide, and 1 $\frac{1}{2}$ " deep. Send a stamped, self-addressed envelope for more information.

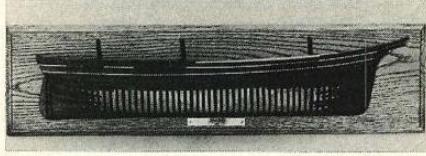
The latest release from Huma-Modell, Kiliansdäster Strasse 9, 6450 Hanau 6, West Germany, is a 1/72 Fw 44 "Stieglitz." It sells for DM (deutsche marks) 17.00 (approximately \$5.50 U.S.), including airmail postage.

Mikansue, 3 Bell Lane, Eton Wick, Windsor, Berks. SL4 6JP, England, manufactures and distributes 1/43 white metal automobile kits. A product list is available.

Model Rectifier Corporation, 2500 Woodbridge Avenue, P. O. Box 267, Edison, NJ 08817, has added two Tamiya 1/12 motorcycle kits to its line: No. 1435, Honda CBR 400F, and 1436, BMW K100. Also new are a New Man Porsche 956 kit, No. 2449, and a Honda City Cabriolet kit, 2450, both from the 1/24 sports car series.

Available from Monogram Models, Inc., 8601 Waukegan Road, Morton Grove, IL 60053-2295, are three new 1/24 automobile kits: No. 2209, 1985 Corvette; 2242, 1985 Pontiac Fiero GT; and 2243, 1985 Mustang SVO turbo.

Northeastern Scale Models, Inc., 99 Cross Street, P. O. Box 425, Methuen, MA 01844, has introduced a half-hull plaque kit of the



1857 American medium clipper ship *Black Hawk*. The kit was designed by William Hitchcock and is the first release in Northeastern's Sea Classics series. The kit features exposed ribs, step-by-step plans, full-size diagram, basswood and mahogany hardwoods, and a 22" x 5 $\frac{1}{4}$ " plaque.

RAREplanes, 69 Redstone Hill, Redhill, Surrey, England, has announced the release of three new 1/72 vacuum-formed aircraft kits: Beech UC-12B Super King Air 200,



Gates C-21A Learjet (Model 35), and Grumman XF5F-1 Skyrocket. RAREplanes' U. S. distributor is Brookhurst Hobbies, 12741 Brookhurst Way, Garden Grove, CA 92640.

Decals. Americal/Gryphon Decals, 4373 Varsity Lane, Houston, TX 77004, has released three new 1/72 decal sheets. A revised decal of Kriegsmarine Camouflage 1917-1918 is the subject of sheet No. 1; sheet 10 includes World War One Italian roundels; and sheet 12 is of WWI German crosses, varying in size from 5 mm to 47 mm. Each sheet costs \$5.00; add 88 cents for postage for up to three decal sheets and 17 cents for each additional three sheets. A catalog is available for 40 cents or two International Reply Coupons.

The latest 1/72 Microscale decals from Krasel Industries, Inc., 919 Sunset Drive, Costa Mesa, CA 92627, include sheet No. 72-456 with markings for "Peach 91," the last F-105 retired from service, "My Karma," an F-105D from Hill AFB, and an F-15A from the 318 Fighter Interceptor Squadron.

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Quartermaster Corps, P. O. Box 908, Buckingham, PA 18912, has announced the release of three 1/32 figure sets of the 2nd Boer War, 1899, British 2nd Cameronians (90th Foot); set No. 14, infantry set, \$65.00; set 15, handler with two horses, \$40.00; and set 16, freight wagon with three infantrymen, \$105.00. Add \$2.00 per set for postage. Send a large, stamped, self-addressed envelope for a complete list.

Eleven packs of figures have been added to the "Paladins and Plate" series from Rafm Company Inc., 19 Concession Street, Cambridge, ON, Canada N1R 2G6. Also new are 4 packs of figures in the "Hussites" series and 12 packs of figures and a set of accessories in the "Flint and Feather" series. All figures are 25 mm.

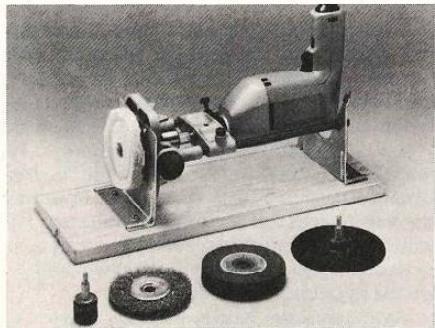
Sovereign Military Miniatures, Ltd., 5711 California Avenue, Altoona, PA 16602, has introduced three new sets of 54 mm (1/32) hand-painted metal figures. Set No. SRB-1 includes ten figures of the Scots Guard Regimental Band, \$110.00; GHB-1 includes ten figures of the Gordon Highlanders (pipes and drums), \$110.00; and GHB-2 includes one officer and four privates of the Gordon Highlanders, \$50.00. Add \$2.50 per order for shipping.

Accessories and diorama materials. ATP, Inc., 3014 Abelia Court, San Jose, CA 95121, sells custom-made lead weights that fit Heller's 1/72 Constellation and DC-6. With the weight installed, each model will rest properly on its nose gear. Each weight is \$2.50 plus \$2.00 shipping. Also from ATP are injection-molded plastic CFM-56 engine nacelles to convert Revell's DC-8-61 to a DC-8-71.

Available from Drumbeat, Birmingham House, St. Mary's Street, Painswick, Glos. GL6 6QA, England, are display cases with either dust covers or sliding front cabinets.

The Rock Quarry, 3705 Knight Lane, Garland, TX 75042, offers tar papers in two sizes — HO (1/87) and O (1/48) scale — and four colors — red, black, green, and gray.

Tools. New from General Hardware Manufacturing Co., Inc., 80 White Street, New



York, NY 10013, is the Home Workshop Kit, product No. 39, \$29.98. This kit converts a hand-held electric power drill into a bench-mounted unit. It includes General Precision Drill Guide No. 36, together with brackets, hardware, and instructions. If you already own a General Precision Drill Guide,



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#72-5 F15's, 48th FIS, Langley AFB, Virginia and		555th TFTS, Luke AFB, Arizona.....	\$3.50
555th TFTS, Luke AFB, Arizona.....	\$3.00	#48-5 F-106A, 191st FIG, MICHIGAN ANG.....	\$3.75
#72-6 F106A, 101st FIS, Mass., ANG.....	\$3.50	#48-6 F-106A, 101st FIS, MASS ANG.....	\$3.75
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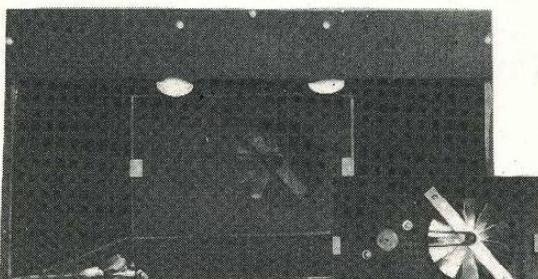
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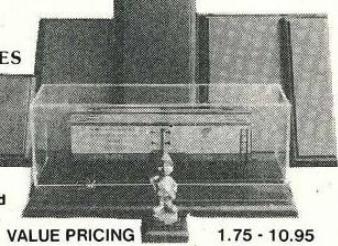
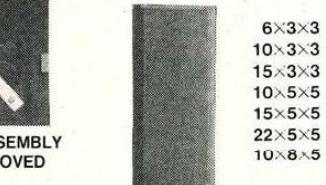
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Converter Kit No. 38 contains only brackets and hardware for bench mounting.

Ora Electronics, 20120 Plummer Street, P. O. Box 4029, Chatsworth, CA 91313, has introduced an illuminated magnifier lamp, No. MX114, \$59.95. It comes with a 5" distortion-free glass magnifier that magnifies three times; four-way positioning; 360-de-



MX114

gree tilting or turning; 22-watt circular daylight fluorescent bulb; all-metal construction; spring balancing; and a heavy-duty mounting bracket. It is available in chocolate brown or ivory.

Pactra Hobby Products, 16946 Sherman Way, Van Nuys, CA 91406, is producing two new lines of paintbrushes. The camel hair lacquering brushes come in six sizes: 1/4", 5/8", 1/2", 5/8", 3/4", and 1"; prices range from \$1.05 through \$2.90 each, depending on the size. Also available are Oxford Series all-purpose camel hair paintbrushes in sizes 1 through 6; they retail for approximately 40 cents each.

Catalogs. Aeroprint, South Shore Road, Spofford, NH 03462, has released its 64-page aviation art print catalog No. 6.

The Arsenal offers books, magazines, military miniatures, plastic kits, and war games. To receive a catalog, send a stamped, self-addressed envelope to 1506 Lorraine Avenue, Bellevue, NE 68005.

Send \$3.00 to Auto World Modelshoppe, 701 North Keyser Avenue, Scranton, PA 18508, for the 132-page 1985 model car catalog.

Classic Motorbooks, P. O. Box 1, Osceola, WI 54020, has released its 144-page 1985 catalog, which lists nearly 6,000 titles. It sells for \$2.95, or is free with an order.

An illustrated catalog from CUSH, 6525 West Bluemound Road, Milwaukee, WI 53213, sells for \$5.00 (\$6.00 outside the continental U. S.). CUSH specializes in miniature figures of fact, fiction, and fantasy. The catalog, approximately 200 pages, comes in a loose-leaf plastic binder so you can add periodic updates from CUSH.

Available from Griffin Manufacturing Co., Inc., P. O. Box 308, Webster, NY 14580, is a free catalog of Grifhold tools, including knives, safety knives, cutters, burnishers, magnifiers, and pounce wheels.

The winter 1984-1985 book catalog from Historic Aviation, 3850 Coronation Road, Eagan, MN 55122, sells for \$1.00.

Brian K. Mitchell, P. O. Box 52414, Livo-

nia, MI 48152, is importing Alymer military miniatures. A 58-page full-color catalog listing more than 900 figures sells for \$5.00, which will be credited to your first \$50.00 order.

R. E. H. Distributing, 4415 Marburg Avenue, Cincinnati, OH 45209, has released its 1985 model car racing parts list and reference manual. The 90-page catalog sells for \$6.95.

Send \$1.00 to Sherrill Studio, P. O. Box 2264, Riverview, MI 48192, for a catalog of aviation prints. The \$1.00 is refundable with your first order.

Catalog No. 3 from Warren Tool Company, Inc., Route 1, Box 14A, Rhinebeck, NY 12572, sells for 60 cents. The 22-page catalog includes listings for carving kits, carving chisels, riffler files, riffler rasps, knives, and woodburning tools.

World War 1 Aero Bookshop, Box 142, West Roxbury, MA 02132, is offering catalog No. 26 for \$2.00. The 32-page catalog lists aviation, military, armor, and naval books.

Miscellaneous. Aero-Art Unlimited, 5751 East Scarlett, Tucson, AZ 85711, is the U. S. distributor for aviation posters produced by Key Publishers in England. Each poster measures 16" x 22½" and sells for \$3.50.

Annual subscriptions to *Aeroplane Monthly*, a British magazine for aviation enthusiasts, are available for \$25.00 (air freight service) or \$45.00 (airmail) from John Barrios, Business Press International (U. S. A.), 205 East 42nd Street, New York, NY 10017.

Nine WWI and WWII posters imported from England are available from Biggin Hill Publ., P. O. Box 786, Freeport, NY 11520. Each poster measures 20" x 30" and sells for \$7.00.

Cleveland Model and Supply Co., 10307 Detroit Avenue, Cleveland, OH 44102, offers model aircraft plans in 3/8", 1/2", 3/4", 1 1/2", 2", and 3" scales. A list of plans is \$1.00.

A mold-making kit to produce 15 mm to 77 mm items such as figures, cannons, and miniature soldier parts is available from Coastal Enterprises, 315 Little Falls Road, P. O. Box 44, Cedar Grove, NJ 07009. The kit sells for \$33.00 plus \$3.00 shipping. Send a stamped, self-addressed envelope for a brochure; \$1.00 for a catalog of soldier molds; or \$2.00 for the catalog and a miniature soldier.

New from Densa Fine Arts, 536 Morse Avenue, Schaumburg, IL 60193-4563, are two limited-edition aviation art prints signed by artist Jim Stovall. Stovall's print of an FB-111 measures 14" x 35", while the KC-10 print measures 16" x 29". Each is \$25.00; add \$3.00 per order for postage.

Krazy Glue, Inc., 53 West 23rd Street, New York, NY 10010, has prepared a free booklet and catalog sheet covering topics such as which glues work best on specific types of materials, how to prime surfaces, how much time to allow for various glues to set, how to store the glues, and how to clean up. Ask for the Krazy Glue hobby and craft booklet (No. 510-042) and catalog sheet 509-035.

Peover Model Promotions, 17 Birchwood Drive, Lower Peover, Knutsford, Cheshire WA16 9QJ, England, is selling hand-finished, assembled models of fire, ambulance, police, promotional, and public service vehicles. The line is based on models from com-

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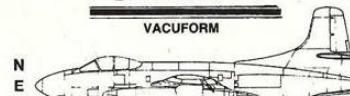
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panies such as Corgi, Dinky, Matchbox, and Solido.

Pilgram Hall Museum, 75 Court Street, Plymouth, MA 12360-3891, has released a plans packet for a model of the *Sparrowhawk*, a seventeenth-century English ship wrecked off Cape Cod, Massachusetts, in 1626. The packet includes plans for lines and hull details; sail plan showing deck line, sails, and rigging; plans for rigging and fitting specifications; photo of the completed model; 22-page illustrated booklet covering the history of the *Sparrowhawk*; and painting notes. It sells for \$15.00 plus \$2.00 postage.

Russ Porter's line of lithographs includes several steamships: *Agawa Canyon* depicted in 1974; *Aquitania*, 1930; *Carl D. Bradley*, November 18, 1958; whaleback passenger steamer *Christopher Columbus*, 1931; *Lusitania*, 1909; Grand Trunk Railway car ferry *Madison* on Lake Michigan; and the *Titanic*, April 10, 1912. Another lithograph shows the U. S. Navy dirigible *Akron* in 1932. An illustrated brochure is available from Porter at 2228 South 81st Street, West Allis, WI 53219.

Quality Castings Inc., P. O. Box 11714, Alexandria, VA 22312, produces a line of metal castings of WWII and postwar armored vehicles and infantry figures. The vehicles are 1/108 (approximately 15 mm scale), while the figures are 15 mm. Prices are from \$1.50 to \$19.75, with most in the \$3.00 to \$5.25 range. Assembled and painted vehicles are available at higher prices.

New from Repla-Tech International, 48500 McKenzie Highway, Vida, OR 97488, are $\frac{1}{16}$ " = 1' drawings by Edward H. Wiswesser

of U. S. Naval frigates, destroyers, and cruisers.

Available from Sagapress, Box 21, Sagaponack, NY 11962, are measured drawings for 25 wooden vessels from the Historic American Merchant Marine Survey. Included with the drawings is information such as dimensions, tonnage, origins, and owners. Basic sizes of the drawings are 17" x 22" and 17" x 35".

For a copy of the *Mini Pullin News*, send a long, stamped, self-addressed envelope to Jeff Sanders, 1010 Pleasant Street, Ironton, OH 45638. This newsletter is devoted to table-top truck pulling.

Coming events. Members of the South Bay Model Shipwrights will exhibit their nonoperating models of wooden sailing ships February 9 (10 a.m. to 5 p.m.) and February 10 (11 a.m. to 3 p.m.) at the Wood Tool Center, 2545 Showers Drive, Mountain View, California. Admission is free. For more information telephone Jean Eckert at (415) 964-0561 or George Swierczynski at (415) 324-1811.

IPMS/North Central Texas will host a contest and flea market March 9 at the Quality Inn, Irving, Texas. For information, send a stamped, self-addressed envelope to Contest '85, 108 South Lee Street, Irving, TX 75060, or phone (214) 438-9233 during the day or (214) 226-3675 after 6 p.m.

The Knoxville Scale Modelers' Association will hold its annual contest March 16 at the Holiday Inn World's Fair, Knoxville, Tennessee. Registration begins at 9 a.m. The cost is \$5.00 for the first model entry and \$1.00 for each additional entry. Awards

will be given in aircraft, armor, miscellaneous, and novice categories. Further information is available from KSMA, 205 Destin Circle, Knoxville, TN 37922.

An airliner slide show and mini-convention, sponsored by the South Florida Airline Historical Association, will take place March 23 at the Viscount Hotel Playhouse, 500 Deer Run, Miami Springs, Florida. General admission is \$2.50, and a special hotel rate is available. For more information, write to Don Levine, 10 Northeast 131st Street, North Miami, FL 33161.

Noreastcon XIV, the IPMS Region 1 convention, will be held April 26 and 27 at the Sheraton Mansfield, exit 7A off I-95 North, Mansfield, Massachusetts. Send a stamped, self-addressed No. 10 envelope to Jim Guiney, 59 Summit Street, Arlington, MA 02174, for further information.

The Western Reserve Chapter will host the IPMS Region IV convention April 26 and 27 at the Holiday Inn-Independence, Cleveland, Ohio. Write to Andy Vidra, 20090 Champ Drive, Euclid, OH 44117, for details.

The Indianapolis Adam's Mark Hotel will be the site of the 1985 IPMS national convention, July 18-21. For more information write to IPMS Indianapolis, 1985 National Convention, P. O. Box 88295, Indianapolis, IN 46208.

Military miniaturists, figure painters, military collectors, and toy soldier enthusiasts in the Richmond, Virginia, area interested in joining a club should contact Woody Childs at (804) 745-3819 in the evening or Bob Graham at (804) 285-8055 during the day.

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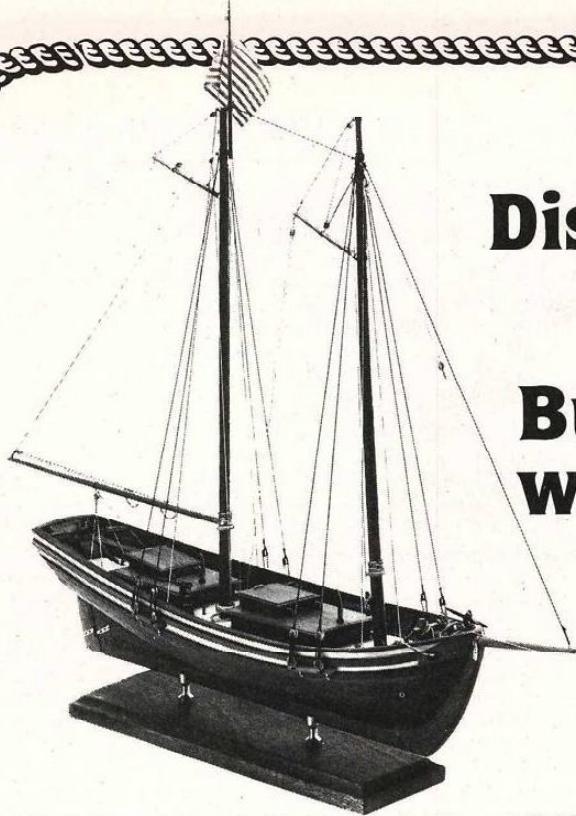
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of rare, yellow boxwood. We include eyelets, bracers and belaying pins—over 70 parts of solid brass! Even the cabin door hinges are brass, as are the 250 miniature nails you'll use to fasten the planking to the hull and deck. And, since the original wooden *Swift* had no plastic parts, our kit doesn't either—anywhere!

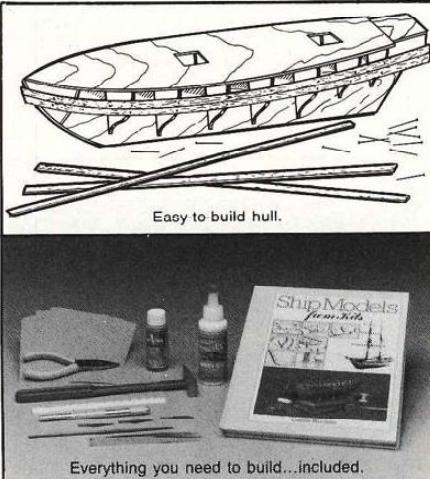
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Kit: No. 691, AC-130A Gunship

Scale: 1/72

Manufacturer: The Testor Corporation, 620 Buckbee Street, Rockford, IL 61101

Price: \$18.00.

AFTER THE SUCCESS of the Minigun-equipped AC-47 "Spooky" gunship, the USAF wanted a more heavily armed aircraft to succeed it. The C-130 Hercules was the logical choice and two AC-130 Specter variants with several changes in armament have been produced. This Italeri kit (with new decals, instructions, and box by Testor) represents the AC-130A with three-blade propellers and armed with two Miniguns, two Vulcan cannons, and two 40 mm Bofors cannons.

The kit contains 178 parts molded in black and clear styrene. The decals include markings for two aircraft, one in three-color camouflage topside and black below, and an overall gunship gray aircraft. The detail is finely raised panel lines of above-average quality. The major disappointment of the kit was the lack of interior detail beyond the cockpit. The fuselage of the gunships held more than the guns — ammunition storage, flares, and electronics for the surveillance equipment crowded the cargo hold. None of



All photos, FINESCALE MODELER: A. L. Schmidt or Paul A. Erler unless otherwise credited.

this is included and if the model is built with the cargo ramp open, this shortcoming becomes visible. I chose to close the cargo ramp, even though most photos of AC-130s on the ground show it open.

The instructions are typical of Testor's reboxed Italeri kits — excellent, with drawings of the two versions and references to Federal Standard paint colors. The parts fit together well, especially the wind deflectors and electronic shields on the left side of the fuselage. The axles on the main gear struts were a bit too long and prevented the wheels from fitting into the bay and onto the axle. To solve the problem, I shaved the axles down and filed away a little plastic from the lip on the outboard edge of the bays.

Since the model is large, I decided to paint the fuselage before the wings were attached.

This also made it easier to paint the inboard engine nacelles. After I attached the wings and sanded the seam smooth, all I had to do was paint over the joint. I installed the nose gear strut but didn't glue it in until the model was nearly finished to avoid damaging it. I also left off the main gear doors and other easily damaged small parts until later.

The finished model is big — 22" wing-span, 16 1/4" long, and 6 5/8" high, and matches the dimensions given in Squadron/Signal's *C-130 Hercules in Action*. Because of the size and complexity of the kit, finishing it took more time than I expected — 50 hours, a lot of it painting the exterior. I'm happy with the results, but can only recommend the kit to experienced modelers.

Dennis Moore

Kit: No. 749, Lotus 49B

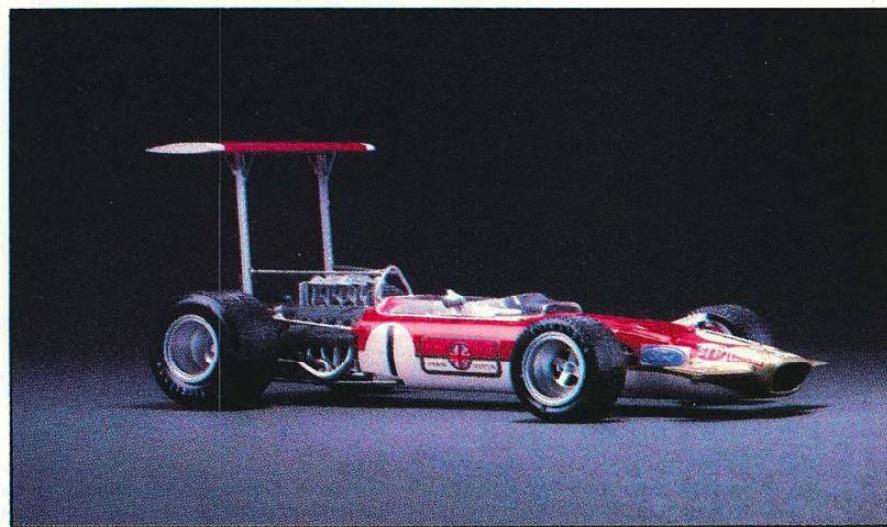
Scale: 1/24

Manufacturer: Heller, distributed by Polk's Model Craft Hobbies Inc., 346 Bergen Ave., Jersey City, NJ 07304

Price: \$14.95.

THE LOTUS 49B first appeared in 1967. Its radical wing, which provided more than 200 pounds of pressure (and increased traction) on the rear axle, was installed for the 1969 racing season. Racing greats Graham Hill, Jim Clark, and Joseph Siffert drove the cars to victory in the Grand Prix circuit during the late '60s.

Heller's 1/24 scale Historic Racing Cars series may be new to many modelers, but they are reissues of kits from the late '60s and early '70s. The Lotus kit features 83 parts molded in red and clear styrene and black vinyl tires. Although the first issue of this kit had chrome parts, this reissue does not. The detail is above average, especially the Ford Cosworth engine and suspension. The screens over the fuel injector intakes are simulated by clear plastic orbs with etched screen detail. The tires are glossy black and so soft that they resisted my ef-



forts to sand the mold flash from them with sandpaper. The clear windshield is thick and out of scale.

The instructions are easy to follow and the decal sheet well printed. The kit fit to-

gether well, better than most kits of this vintage. Assembly is complicated by the large number of parts and extra care was needed to align them properly. I sprayed all the parts that normally would have been

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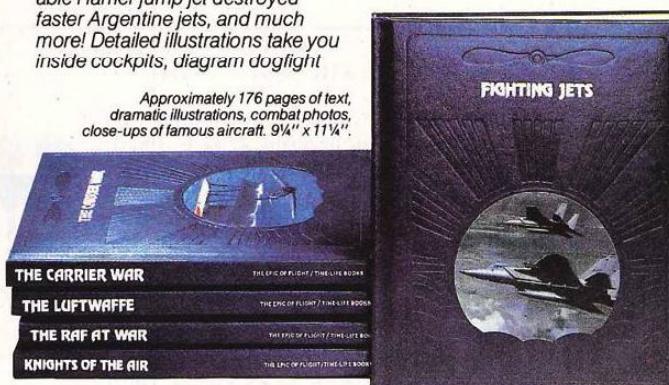
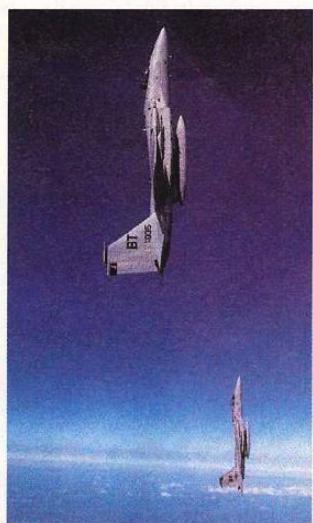
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chromed with Hobsco Aluminum, then painted the rest of the kit with Testor gloss paints.

The finished model compared well with photos I have of this car. Due to the com-

plexity of the engine and suspension assemblies, I recommend the model to experienced builders. It took me over 40 hours to finish mine, but I'm pleased with the results.

Bill Gebhard



Kit: No. 1089, SdKfz 250/8 Conversion

Scale: 1/35

Manufacturer: Air Press Models, available from The Arsenal, 1506 Lorraine Ave., Bellevue, NE 68005

Price: \$10.00.

VACUUM-FORMED ARMOR conversions are not as plentiful as their similarly molded aircraft cousins, but with few new injection-molded armor kits being released these days, they present new worlds to conquer. This kit is made to convert MRC-Tamiya's SdKfz 250/3 (kit No. 3613) and includes 8 vacuum-formed parts in white styrene along with 24 injection-molded parts for the 75 mm KwK37 L24 gun (from the Italeri SdKfz 234/3 Armored Car kit).

The vacuum-formed parts include detail, but are not on a par with injection-molded parts. There are no decals. The biggest drawback to the kit is the instructions. There are no step-by-step directions and only a rough drawing of how the vacuum-formed parts go together. I had to repeatedly test fit the parts and make adjustments to make them fit properly on the cut-down

Tamiya chassis. The gun assembly portion of the instructions came from the Italeri instruction sheet, but they don't show how the gun is mounted to this vehicle.

I recommend this assembly sequence: First cut down the Tamiya chassis as indicated by the shaded portion on the Air Press instructions. Next, assemble the modified lower chassis as in Tamiya's steps 1 through 9. Then assemble and install the vacuum-formed parts onto the chassis. I detailed and painted the interior next (Tamiya steps 11 and 12), then assembled and painted the 75 mm gun. The side guards can be modified from part Nos. 95 and 97 from the injection-molded sprue. Since there are no painting directions, I had to consult my references for color information.

Although there were times during construction when I wondered if it was worth all 80 hours I put into it, I'm pleased with the results. The finished model scales well with information in *The Encyclopedia of German Tanks of WWII* by Peter Chamberlain and Hilary Doyle. This conversion is not for novices, but it fills a gap in armor model collections.

Glenn Kreinus

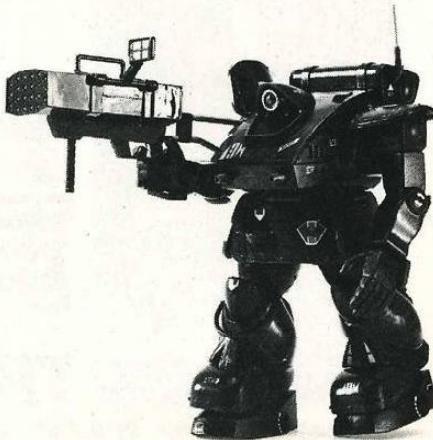
Kit: No. 444012-2, ATH-14-ST Tortoise

Scale: 1/35

Manufacturer: Takara, distributed by Twentieth Century Imports, 4732 E. Pearl, Boulder, CO 80303
Price: \$6.00.

IMAGINE FOR A MOMENT this machine slogging its way out of a swamp, ready to loose a barrage of lethal weapons from its armored fists. Such imaginings are the stuff that makes up the "new wave" of modeling; polymorphic machines battling it out on unfamiliar terrain for unknown causes. Until the Japanese sci-fi TV programs make it to the U. S., we'll have to use our imaginations to explain these curious, and fun, models.

Takara's Tortoise is one of the armored fighting suit variety. No, it's not a suit that



fits over a human body; the human operator sits in the command chair in the upper body and views the battle through the cycloptic sensor in the head. The kit contains 91 parts molded in gray and light green styrene. It features optional open and clenched fists and articulated ankles, knees, hips, waist, shoulders, elbows, and wrists. Some of the joints are covered by hinged armor plates. Topping off the brute is a 22-round weapon launcher with framing sight.

The model went together easily with a little extra care used when assembling the joints. There is a fine line between too tight (joints won't move) and too loose (joints won't hold position). I used super glue to as-

semble the model. The instruction diagrams are clear, but there was no English on my sample. The six-color decal sheet consists of 58 items, mostly stencil-type placards to be scattered all over the machine. Since there were no clear parts, I bought a 4 mm clear plastic eye from a craft store and inserted it in the main sensor.

The finished model looms 5 1/4" tall. I spent 15 hours on it, and I intend to build more like it. Unlike other machines, the Tortoise isn't overloaded with guns and rockets — it looks almost practical in a mean sort of way. This kit is a nice change of pace that can be built by modelers with a couple of years' experience.

Randy Guenin



D. H. Minton

Kit: No. 010, Fairey Albacore

Scale: 1/72

Manufacturer: Pegasus, Strebor House, Thurston Park, Whitstable, Kent, England

Price: \$11.95.

DESIGNED AS THE SUCCESSOR to the Fairey Swordfish, the Albacore served briefly in the Fleet Air Arm (March 1940 to November 1943) and was replaced by yet another Fairey product, the Barracuda. A torpedo bomber by design, the Albacore also served as conventional bomber, artillery spotter, and mine layer.

An experienced modeler with lots of time can make an outstanding replica from this kit, but a beginner will have trouble. Pegasus provides 18 parts molded in heavy white and clear styrene. Surface detail consists of rough recessed lines and the canopy is thick and cloudy, although the canopy frames are clearly scribed — an excellent pattern for a vacuum-formed replacement.

The instructions provide patterns for the struts and other small parts that are not included in the kit. There is a three-view drawing on the instructions, but it doesn't show the camouflage pattern of the top fuselage and wings; I had to find this in my ref-

erence material. There are no decals and no individual aircraft markings are given on the instructions. Pegasus recommends CompuColor paints and ModelDecal WWII sheets for use on the model.

The assembly sequence is straightforward, but getting the pieces to line up was hard. I had to sand the bonding surface of each fuselage half considerably to narrow the fuselage so the canopy would fit. The canopy was shorter than the cockpit opening, so I had to add filler to the corners at the base of the windscreen and rear of the canopy. I discovered that the lower wing roots were too far forward, eliminating the slight stagger of the wings of the real Albacore. I drilled out the poor engine detail in the cowling and substituted an engine from my spares box. Add to all this the biplane rigging and you've got a major project.

The kit scales closely to the dimensions given in the March 1978 issue of *Air International*. The model took 41 hours to complete, but I'm satisfied with the finished product. I can recommend this kit only to advanced modelers who don't mind scratch-building basic detail parts, hunting for color and marking information, and spending extra time sanding and fitting parts. *Al Jones*

Kit: Vought O2U-1 Corsair

Scale: 1/48

Manufacturer: Wings 48, 3349 Wildridge Drive N. E., Grand Rapids, MI 49505

Price: \$16.95.

THE EARLIEST CORSAIR was a U. S. Navy observation aircraft of the late 1920s, and this is the first kit to be produced of the biplane. The 79-part vacuum-formed kit contains 2 injection-molded sprues of strut

stock, and a white metal engine and propeller. A piece of clear plastic is provided for the windscreens, but it's too thick for the scale. An excellent decal sheet provides markings for a Navy and a Marine Corsair.

The detail is above average for a vacuum-formed kit. However, the interior consists only of a floor and two seats; the rest is up to the modeler. Exhaust pipes, bomb racks, scarf ring, Lewis gun, and other minor details will have to come from the spares box.

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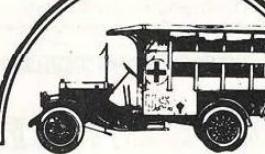
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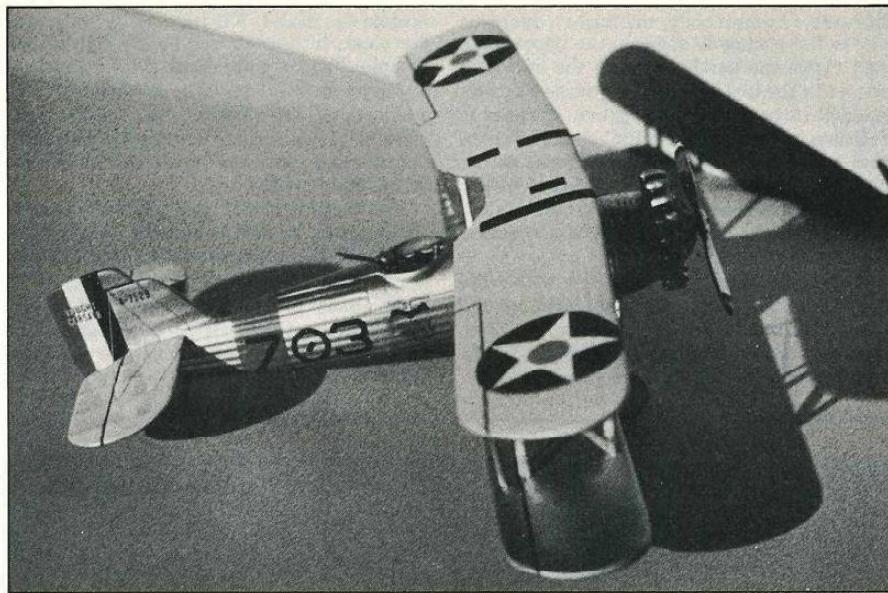
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D. H. Minton

The kit features optional wheels and floats.

Although the kit fit together well, I had trouble with the trailing edges of the wings. The rib detail is too pronounced here, so I recommend that you carefully sand down these surfaces from the inside, then sand the rear of the ribs from the outside to avoid trailing edges that would be too thick. I used a Popsicle stick as a spar for the lower wing.

Although the instructions have nice drawings, it is difficult to produce the proper strut and landing gear configurations using them alone. There are no templates for the windscreens, either. I substituted wheels from a 1/72 scale Matchbox Walrus. The engine poses a problem; the

cylinder heads project from a streamlined fairing on the nose. To install the metal engine I had to cut this fairing in half and cut out the cylinder ports. The injection-molded struts were an asset; I cut them to the proper lengths by using the strut outlines on one of the vacuum-formed sheets.

The kit comes pretty close to scale dimensions. The best reference for this aircraft is the February 1973 issue of *Wings*. The model took 50 hours to complete, 20 hours just to paint, decal, and rig. Because of the vague instructions and the inherent problems of biplane models (struts and wires), I can only recommend this kit to experienced builders.

D. H. Minton

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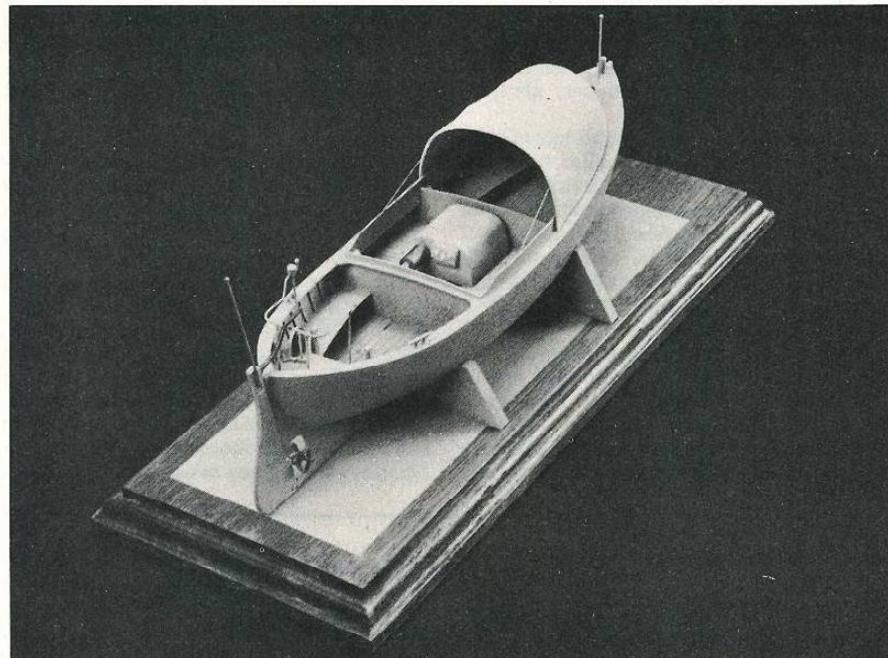


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Kit: No. 2632, U. S. Navy 26' Whaleboat

Scale: 1/32

Manufacturer: Staubitz of Buffalo, 105 Hollybrook Drive, Williamsville, NY 14221

Price: \$14.95 plus \$1.40 postage.

BUILDING THIS VACUUM-FORMED kit is similar to building a wooden ship kit, but not as difficult. The kit contains 31 parts including vacuum-formed outer hull, inner hull, engine cover, transmission hous-

ing, and canopy. Also included are .030" styrene sheets, strips, and rods, six white metal castings, and copper wire. The rudder, upper decks, bulkheads, and stern seats are cut from the styrene sheet with the aid of templates provided in the instructions. There are no decals.

The level of detail is adequate. The molding of the outer hull is good, but the plastic was drawn dangerously thin at the skeg (rear of the keel). I recommend filling it from the inside with sheet styrene, super glue, or epoxy to keep it from crushing. The instructions tell exactly what to do but are weak in explaining how to do it. The scale drawings are good except for the engine area; it's difficult to see where everything goes without either perspective views or photos. I found the templates for the bulkheads to be $\frac{1}{8}$ " too high, so I cut them down to fit.

It is difficult to solder the copper wire for

the helmsman's railing. First, each piece of wire should be tinned. I also used small alligator clips as heat sinks on each side of the joint I was soldering to keep the heat from melting the previous joints. I found it difficult to install the propeller shaft through the bulkhead to the engine. The warning in the instructions about the liberal use of liquid cement should be taken seriously since too much could melt the thin moldings.

I made a wood base and cradles to display the model. The 9 $\frac{1}{4}$ "-long model scales almost perfectly, measuring 25' 10" — just 2" off the advertised 26'.

Cutting so many parts from sheet styrene, the careful handling of the vacuum-formed parts, and soldering make this a project for advanced modelers, preferably with experience in vacuum-formed kits. I spent 25 hours on it and I'm happy with the finished model.

Al Jones



Philip Friddell

Kit: No. D021, F-20 Tigershark

Scale: 1/72

Manufacturer: Hasegawa, imported by Minicraft Models, Inc., 1510 West 228th St., Torrance, CA 90501

Price: \$5.50.

THE LATEST IN THE LINE of Northrop fighters that began with the F-5A Freedom Fighter and T-38 Talon, the F-20 (formerly designated F-5G) forgoes the twin J81 engine concept in favor of a single, large, advanced-technology F404 engine. The results bring the F-20 close to the performance of the F-16 Fighting Falcon.

Hasegawa's kit contains 49 parts molded in light gray and clear styrene. The surface detail is recessed, fast becoming a new standard for kits even in this scale. A nice boarding ladder is provided. The instructions, printed in English and Japanese, are easy to follow. The decals are a bit thick and provide markings for the second prototype and basic USAF insignias.

Overall, the fit of the parts is excellent, especially the wing-to-fuselage joint, but the intakes need careful fitting. The fuselage at the seam underneath the tail is slightly concave; I don't know if the aircraft is actually shaped this way. The scribing on

the barrier hook is extremely heavy. Installing part B-4 can be tricky; it has to drop into the aperture in the top of the nose after the fuselage halves have been joined. The molding of the gun barrels in B-4 is poor; instead of well-defined barrels there are simple bars projecting out of the gun troughs. The slots in the Sidewinder missiles are larger than the tabs on their pylons. Care is needed when aligning the canopy actuators (parts A-7 and A-8) so that the canopy attaches properly.

The instructions indicate that the two antenna blisters on the nose should come off; this is correct and shows how Hasegawa has attempted to keep on top of the changing details of a machine that has yet to see production. By the same token, I recommend modelers who strive for accuracy check their references for color schemes and weapon layout. This will become easier when (and if) the F-20 goes into service.

The kit scales perfectly with information I found in a Northrop brochure. I only spent three hours on the model because there were few parts and no filling was necessary. It's a perfect out-of-the-box model to change the pace from conversions and superdetailed projects. I recommend it to modelers of any skill level.

Philip Friddell

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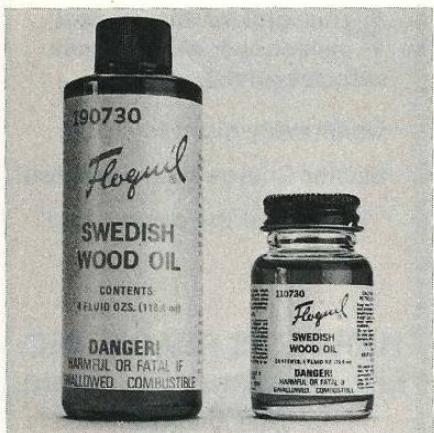
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FINESCALE MODELER staff photos by A. L. Schmidt and Paul A. Erler



Wood finish

Floquil-Polly S Color Corporation, Route 30 North, Amsterdam, NY 12010-9204, has added Swedish Wood Oil to its line. It is a one-step sealer-finish for wood surfaces. A 1-ounce bottle sells for \$1.39, while a 4-ounce bottle sells for \$3.49.

90 mm figures

Recent releases in "The Americans" series of 90 mm metal figures from Series 77 Miniatures, 7861 Alabama Avenue, No. 14, Canoga Park, CA 91304, are (from left, below) No. A/40, Lance Rimmer, bounty hunter, 1880; A/39, Young Eagle, Plains Indian, 1870-1880; A/42, Running Buffalo, Plains Indian, 1870-1880; and A/41, G. Eugene Boone, U. S. Navy seaman, 1941-1945. Numbers A/39, A/40, and A/42 sell for \$22.95 each; A/41 is \$25.95.



HO scale diorama materials

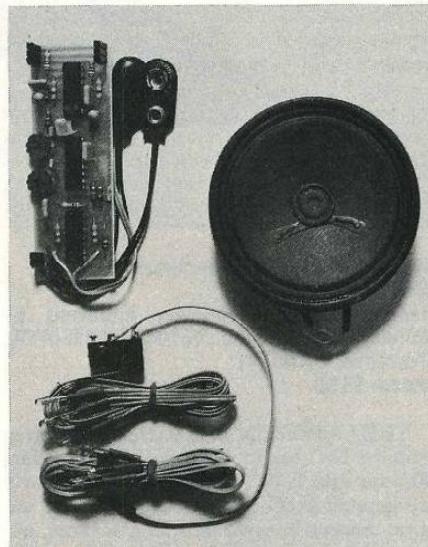
Available from Chooch Enterprises, Inc., P. O. Box 217, Redmond, WA 98052, is a line of HO (1/87) scale scenery accessories. In the top row, from left, are No. 7109, milk cans; No. 7115, acetylene welding tanks and cart; No. 7113, drinking fountains; No. 7111, early air compressors; No. 7126, 15-, 30-, and 50-gallon drums; No. 7108, Coca-

Cola "button signs" for structures; and No. 7110, auto tires. From left in the bottom row are No. 7121, electrical power meters; No. 7114, Fairbanks Morse portable scales; No. 7117, exterior plumbing pipes; No. 7120, 7' chimney with tapered flue; No. 7105, early gas pumps; and No. 7100, open-top Coca-Cola machines. Each package is \$3.00 except for No. 7100, \$4.00, and No. 7115, \$2.99.



Paint marker

The Testor Corporation, 620 Buckbee Street, Rockford, IL 61108-4891, has introduced a line of high-gloss enamel paint markers. Each marker comes in a 1/3-ounce tube with a color-coded cap and retails for \$1.98; 12 colors are available.



Electronic machine gun simulator

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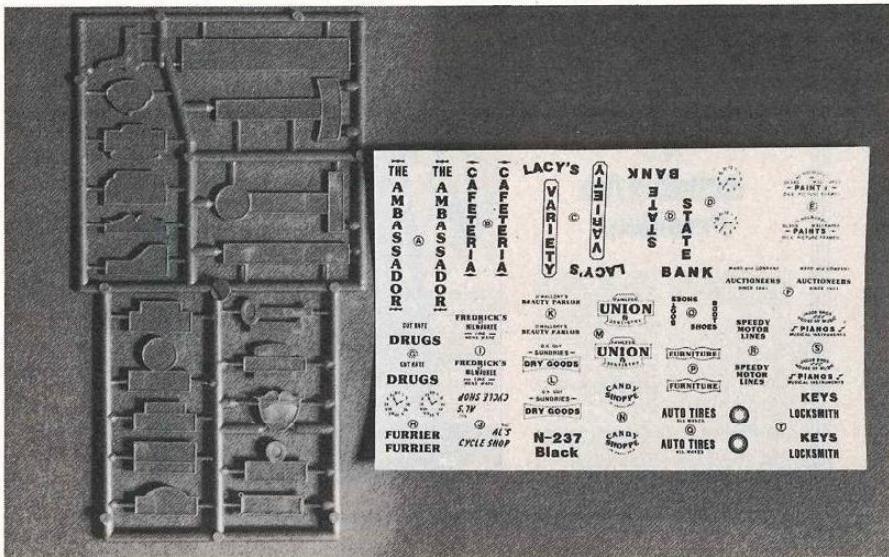
Aspen tree kit

Enough material to create approximately 20 trees is included in this Aspen tree kit from Crummy Products, P. O. Box 112, Bellaire, TX 77401-0112. The kit, product No. 105, comes with assembly instructions and painting tips. It sells for \$8.95; add \$2.00 for shipping if ordering from Crummy Products. The firm's catalog sells for 50 cents.



Super glue

Bostik Consumer Division, Emhart Corporation, P. O. Box 3716, Reading, PA 19605, produces Success II super glue, a cyanoacrylate adhesive designed for use on porous and nonporous materials. A 2-gram tube (.07 ounces) is priced at \$1.29.



Sign kit

This 1/87 scale sign kit from Wm. K. Walther Inc., 5601 West Florist Avenue, Milwaukee, WI 53218, includes a sign sprue, black sign decal sheet, and white window decal sheet. It is product No. 941-1370 and sells for \$4.95.

54 mm figures

New from Miniaturas Andrea, Matías Turrión, 14, 2º C, 28043 Madrid, Spain, are two 54 mm metal figures. At left is a World War One Prussian hussar officer, while at right is a French chasseur officer. Each figure comes with a wooden base, as well as a painting guide and assembly instructions in English. The price is 725 pesetas each (approximately \$4.30), plus 15 percent for postage within Europe and 35 percent for postage to the U. S. **FSM**



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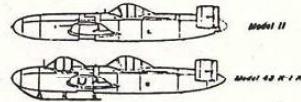
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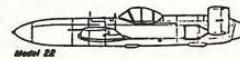
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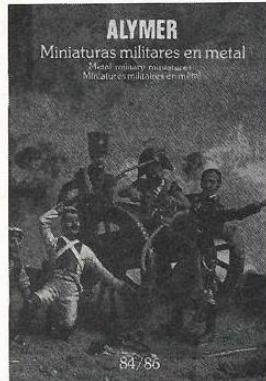


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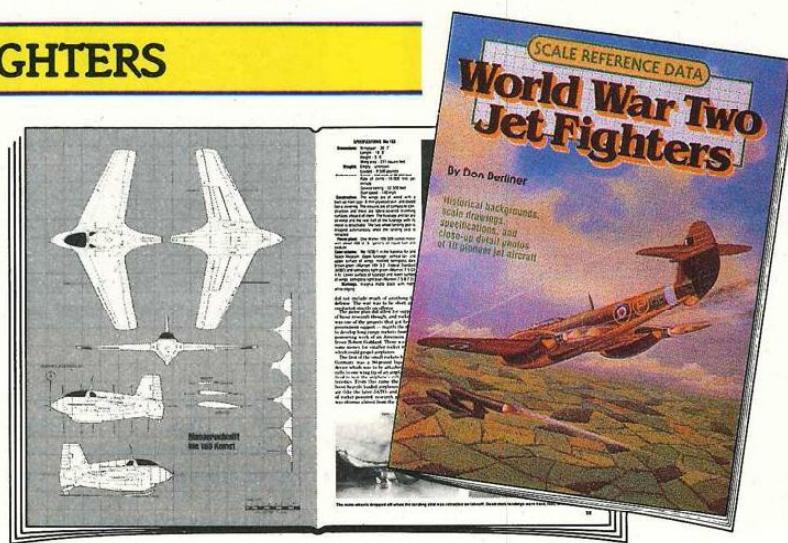
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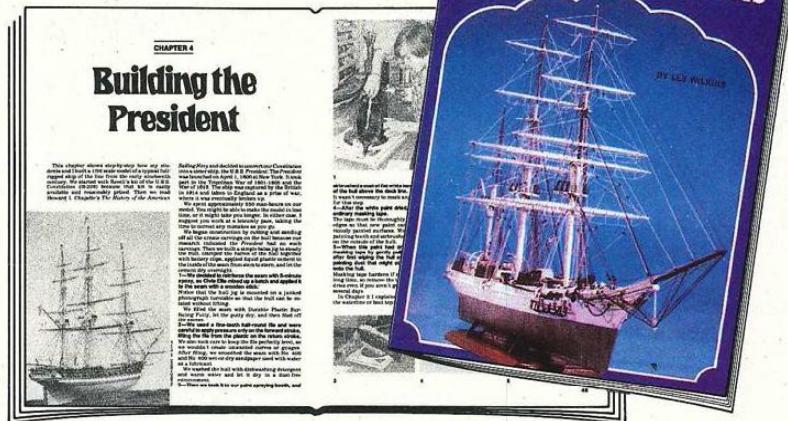
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FROM THE EDITOR

Just for fun

THIS HOBBY OF SCALE MODELING is supposed to be just for fun, but sometimes it seems as if that isn't so. Instead of a refuge from the demands that affect every other aspect of our lives, this pastime gets twisted around into yet another must-do activity — and the fun disappears.

Why, and more important, how do we get the enjoyment back? My guess is that the hobby becomes a lot less relaxing whenever we, as modelers, begin to set goals for ourselves. The goals aren't always related to competition; they can be as "harmless" as deciding to add all details visible in your references to an already-good kit, or trying to finish your current project in time for a club meeting or shopping mall show.

The trouble is that by setting goals we allow the pressure to accomplish them to creep into what should by rights be a no-pressure activity. (Part of the appeal of any hobby, after all, is that you don't *have* to do it.) And when the self-imposed pressure overpowers the enjoyment of building, the project grinds to a halt.

Sound familiar? Got a dozen or more ambitious, half-completed models scattered around your workbench, each of them exactly at the point where the fun evaporated? Try this: Go to your local hobby shop and buy an inexpensive kit outside your main area of interest. Take the box home, put the model together (no extra parts, no putty), paint it, and add the markings that came in the box, all in one evening. If it works, try it again.

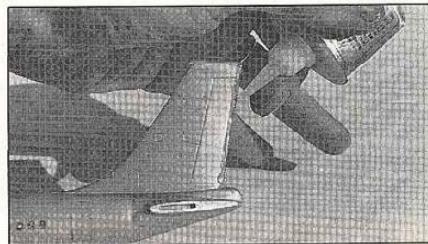
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Editor

FineScale MODELER

NEXT ISSUE

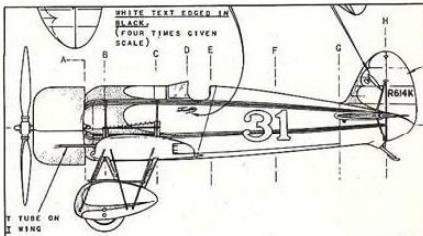
FEATURES



About cyanoacrylate "super glues." Lloyd S. Jones.

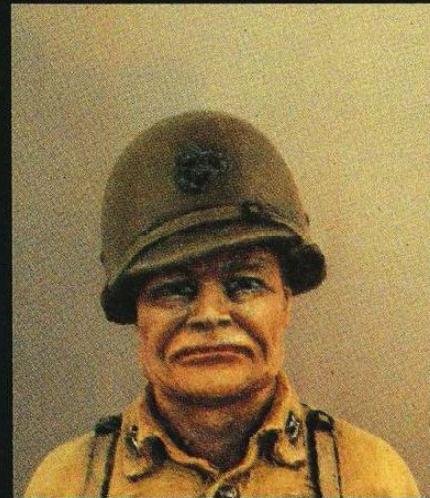
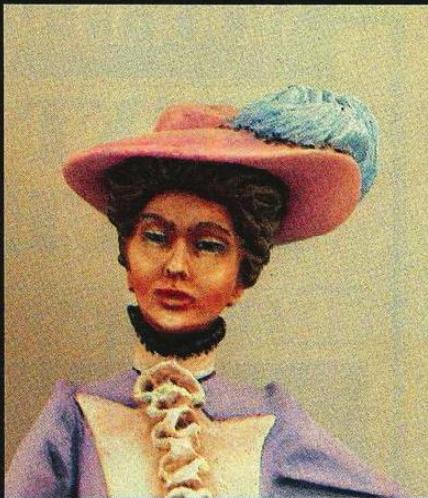
Headlining May/June FSM are two more of the technique articles that have proven tops with FSM readers, the first on the cyanoacrylate "super glues" that have revolutionized the way many modelers build. Author Lloyd S. Jones shows how to use these miracle adhesives, including some truly ingenious applications! And a second new material comes into the spotlight as H. Scott Edwards explains techniques for building your first epoxy resin aircraft kit!

DATA/DRAWINGS



1929 Travel Air Model R "Mystery Ship." B. Karlstrom
Ever wondered what all those "PaK" and "PzKpfw" and "SdKfz" German military vehicle designations mean? Expert Bruce Culver turns interpreter in our next issue and translates the common — and some uncommon — German terms and their abbreviations. Fans of the golden age of aviation will find drawings of the 1929 Travel Air Model R "Mystery Ship," along with Roscoe Creed's article on building a replica of the racer in 1/48 scale.

ALL IN
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Painting faces in artist's oils

Step-by-step techniques you can apply to any figure in any scale

BY GEORGE DEWOLFE

PAINTING FACES is more interesting — and more important — than any other aspect of figure modeling. The reason is simple: The life and character of the figure radiate from the face. But painting faces isn't easy — for a couple of good reasons. First, human anatomy is extremely complex, even on its surface level, and that complexity is compounded by miniaturization. On top of that, mixing oil colors, then highlighting and shading and blending with them, bedevils modelers into screaming "Uncle" before they are barely off the ground. They needn't, and I hope to show you why.

Before discussing technique I want to emphasize that you can't approach painting faces solely from the standpoint of painting technique. More important than skill with a brush is the earnest desire to create (with paint) the *character* of a real person in miniature. I can't emphasize this enough: If you don't have this desire you'll have a hard time painting figures well, no matter how many techniques you employ. I liken this to the famous children's story, *Pinocchio*, where the toymaker Geppetto wanted to make a wood puppet into a real boy. In painting faces there is a point where, suddenly, the figure seems to leap into reality — I call this phenomenon the "Pinocchio effect."

Breaking the face into planes. It's easier to understand face painting if

you first break down the seemingly homogeneous and smoothly contoured human head into planes, Fig. 1. Each plane has a specific type of highlight or shading — for example, the plane of the upper cheek is extremely light compared to the area directly beneath the nose. By understanding the planes you can begin to develop a "feel" for which parts of the face should be light and which should be dark.

Note that the light on this ideal head is from above. Unless there's an aw-

fully good reason to do otherwise, you can assume that the light always comes from overhead, like light coming from the "dome" of the open sky. Figures painted this way will be more realistic and natural.

Light from above striking the chiseled planes of the "ideal" face establishes the highlighting and shading pattern to follow when you apply paint to a figure's face. Once you've grasped the concept of the planes, you need make only a minor leap of imagination

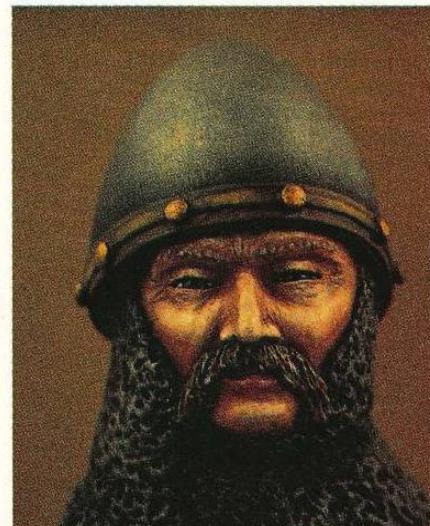
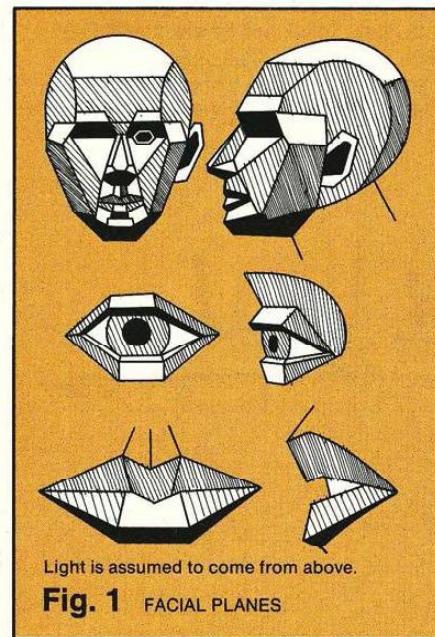
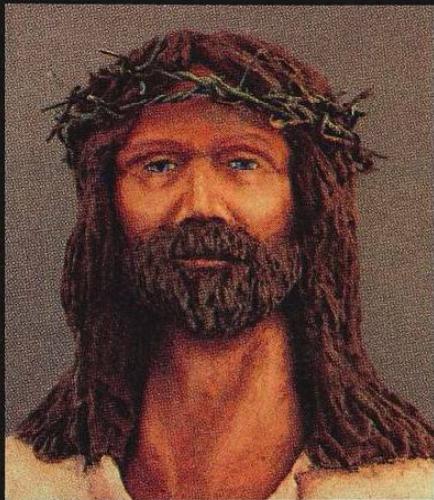


Fig. 2. Note how the shading around the eyes, nose, and cheeks of this 100 mm knight provides most of the facial expression and character.



The facial expression is what establishes the character of each of these figures. The author painted all of them with artist's oils using the undercoating, highlighting, shading, and blending techniques described in this article.

from this "plane" face to the normal human head, meanwhile keeping the idea of facial planes intact.

Three kinds of shadows. When light strikes the head it causes three types of shadows. The first kind are on the planes themselves, and where they intersect. These plane shadows are like the dark portions of our sketches showing the head and eye, but they change from head to head. (The differences in these plane shadows are slight between men and women, but considerable between races.)

The second kind of shadow is the wrinkle. These small, but very dark, shadows are independent of the plane shadows and are unique to each figure. They include dimples, the crow's-feet around the eyes, and laugh lines, Fig. 2. The third kind is the local shadow. These are caused neither by facial

planes nor by wrinkles, but by clothing items such as a hat brim casting a deep shadow on the upper forehead.

Keep these three different types of shadows in mind when you paint faces. Usually, you'll want to start with a broad application of paint to render the planes of the face, then concentrate on specific wrinkles, then add local shadows and details.

Brushes and equipment. Every figure modeler has his own favorite tools and paints. Brushes in particular are highly personal pieces of equipment (I know a modeling couple with "his" and "hers" sets of brushes — both locked up separately). Choose your brushes for the quality of the point and for durability, and don't ever use them for anything but figure painting.

I paint faces with Winsor & Newton Series 7 red sable brushes, and I con-

sider them the finest figure painting brushes available. Buy a No. 000 for detailing, a No. 0 for medium work and blending, and a No. 1 or No. 2 for general painting. A Winsor & Newton Series 12 brush is good for blending, and the Series 52 flat shape is good for dry-brushing and applying paint to large areas. The Grumbacher No. 7805 Cat's Tongue is also excellent for this purpose. I've also found Teka Fine Line brushes of very high quality.

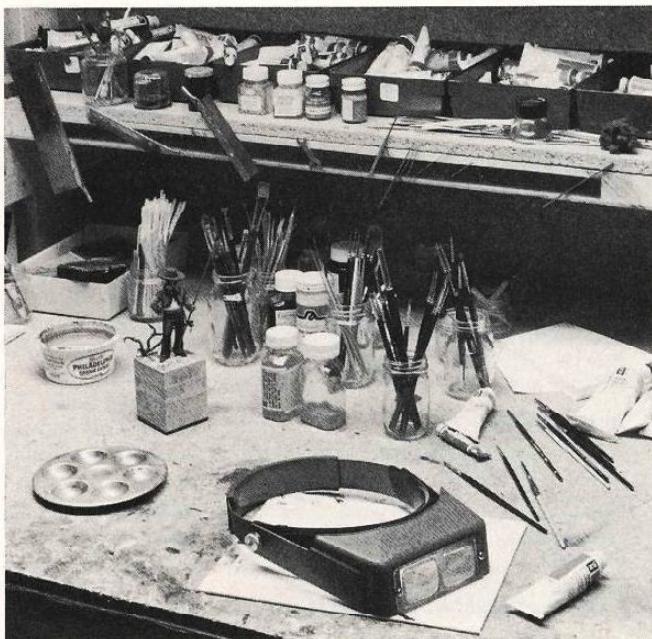
A binocular magnifier that fits over your head such as the Optimisor* is a necessity for painting faces. You will get eyestrain and headaches if you do not use one. I have 2x, 3x, and 4x attachments for mine, Fig. 3.

Almost anything can serve as a pal-

*Donegan Optical Co., 1405 Kansas Avenue, Kansas City, MO 64127.



Figs. 3 and 4. (Right) The author's workbench, with a figure in progress. George rates the Optimisor binocular magnifier among his most important tools. (Above) Supplies, clockwise from top, Winsor & Newton thinner, Grumbacher linseed oil, Pactra 'Namei thinner, Grumbacher Oil Painting Medium No. 1, and Winsor & Newton Artist's Oils.





A



B



C



E



F



G

ette for mixing paints, from newspaper to index cards to glass plates. I use plastic-coated freezer paper because it is inexpensive, clean, and disposable. Round toothpicks are useful for mixing paint, although many painters use a palette knife. You'll also need plenty of tissue paper or rags for wiping and cleaning brushes.

Paint, thinner, and additives. Nothing but the best will suffice for painting faces, and for me that's Winsor & Newton Artist's Oils (the high-quality line,

not the London oil colors), Fig. 4. Most other oil paints I have tried have too much oil in them to be useful for painting faces, but figure painters disagree almost violently about paint. One of the best painters I know uses Grumbacher Finest Oils, and most painters use at least a few specific colors from various manufacturers other than their first choice. Winsor & Newton oils, however, seem to be ground finer and blend better than the others. Figure 5 lists the oil colors you'll need for painting faces, as well as several water-base Polly S colors for undercoating and painting eyeballs.

Many painters use pure gum spirits of turpentine as a thinner and brush cleaner for oils, but the smell drives me crazy! I prefer either Pactra 'Namel thinner or Winsor & Newton mineral spirits, which is odorless and available in pint containers at a considerable savings over smaller sizes. A favorite of others is Grumbacher Oil Painting Medium No. 1, which imparts a flat finish to oils, but I find its smell, too, obnoxious.

When used as a painting medium linseed oil renders oils glossy. I use it mainly to slightly moisten and "point" the brush just before blending. Poppy seed oil is generally better for flesh tones as it does not yellow pale colors. Cobalt Drier accelerates the drying of oils — a tiny drop from the point of a toothpick into a pea-sized blob of paint will make it dry in 12 to 18 hours.

Many figure painters use Dorland's Wax Medium* to impart a flat finish to oil paint. The proportions vary with each color, but about one-third Dorland's to two-thirds paint will do for starters. Most of the time, mixing thinner with oils yields an acceptably flat finish, but you'll have to experiment to see what works for you.

Priming and undercoating. Priming is an important step in figure painting. The primer reveals flaws in sculpting and assembly and serves as a base for the undercoat colors. For metal figures it acts as a barrier to prevent oxidation, which causes a white powder known as "lead disease," ruining the figure.

Metal should be primed with either Imrie/Risley Primer or Floquil Spray Figure Primer. After this protective coat I airbrush the figure with Floquil Primer (RR9) or Floquil Reefer White (RR11). Either serves as a "toothed base" (a paint surface rough enough to hold other paint) for the undercoat. I airbrush plastic figures with Floquil Reefer White or flat white enamel.

Undercoating simply means laying down a coat of paint without highlighting or shading, A (see box, top of this page). For the face I use Polly S Desert Pink (PCA810) for men and Cherry Pink (PF22) for women. Polly S won't rub off when you add highlights and shadows with oils; enamels such as

OILS

Titanium White
Terra Rosa
Burnt Umber
Permanent Magenta (Quinacridone)
Naples Yellow or Jaune Brilliant (I prefer the latter)
Yellow Ochre
Alizarin Crimson
Mars Violet
Mars Red
Mars Orange
Brown Madder Alizarin
Flesh Tint
Payne's Gray

POLLY S COLORS

Desert Pink (basic undercoat flesh color for men)
Cherry Pink (for women)
Dirty White
Night Black
Ogre Dark Brown
Dragon Blue

Fig. 5 COLORS FOR PAINTING FACES

*Dorland's Wax Medium, Siphon Art, 74-D Hamilton Drive, Ignacio, CA 94947.



D

PAINTING A FACE STEP BY STEP

(A) A Series 77 90 mm pilot after the figure has been primed, then undercoated with Polly S acrylic colors. (B) The eyeballs have been painted, and the flesh areas around them touched up with the Polly S flesh color. (C) The figure after applying the first blend shadow and highlight colors, and (D) after blending them. (E) The second blend shadows and highlights applied, and (F) blended. (G) The face after the finishing blend, with all wrinkles and detail shadows added, and extra color worked in to give the figure life.



Even these 1/76 scale desert rats show lots of character. The eyes are mere black slits, but the lower eyelids have been suggested with paint to give form to the eyes.

Humbrol and Pactra would wear off during blending.

First: eyeballs. Paint the eyeballs first: Doing so begins to establish the figure's character. Use Polly S so that once the eyeballs are painted on they cannot be changed by accidental smearing. If oil paint happens to cover them during blending, a brush dampened with thinner will remove the errant color and leave the eyeball clean and intact.

Paint the whites of the eyes first with Polly S Dirty White (PCA805), Fig. 6. Next, using either Ogre Dark Brown (1427) or Dragon Blue (1432), add a line covering the middle half of the eye; this will become the iris. Don't worry about the color overlapping the top and bottom eyelids; you'll go over this later. Next add a black line inside the iris to represent the pupil.

Now reduce any of the lines outside the eyeball with the basic Polly S flesh

color, outline the inside of the eyelid with dark brown, touch up, and you're done, **B**. It takes practice to get this right, but after just a few figures you'll feel confident. And don't forget to use that binocular magnifier!

Mixing flesh colors in oils. Before you apply oils over the Polly S to establish planes and wrinkles you must learn to mix a basic flesh tone and highlight and shadow tones based on it. This is relatively easy.

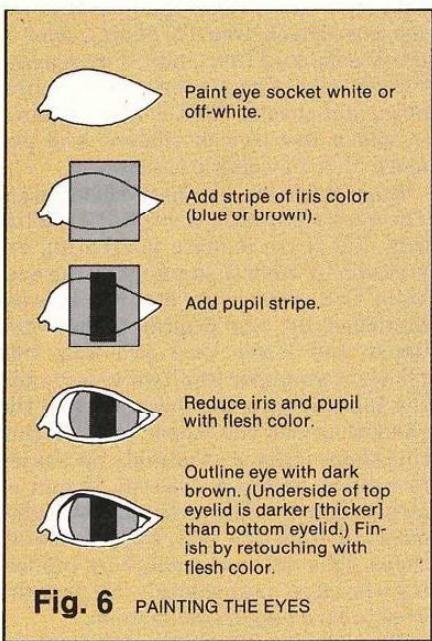


Fig. 6 PAINTING THE EYES

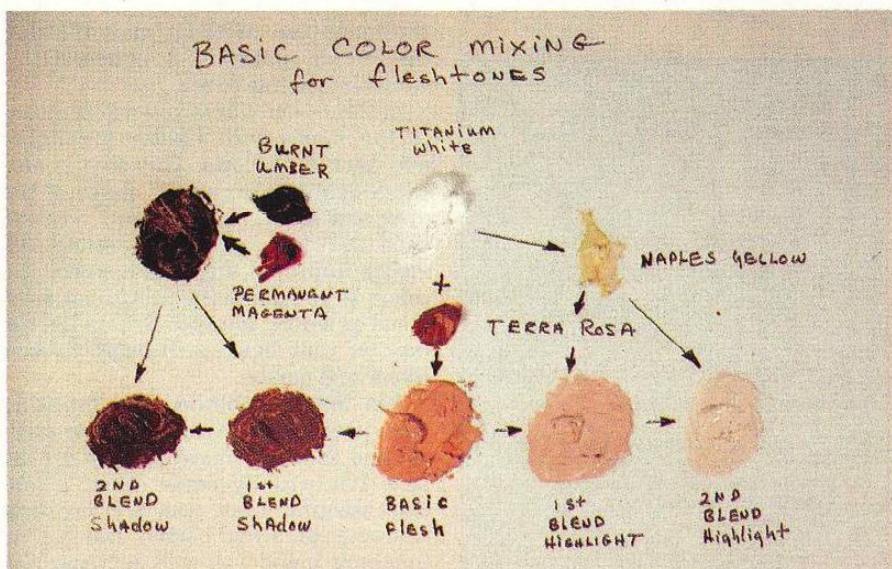


Fig. 7. Here's how George recommends mixing a basic flesh tone from artist's oils, as well as variations of the basic tone for shading and highlighting.

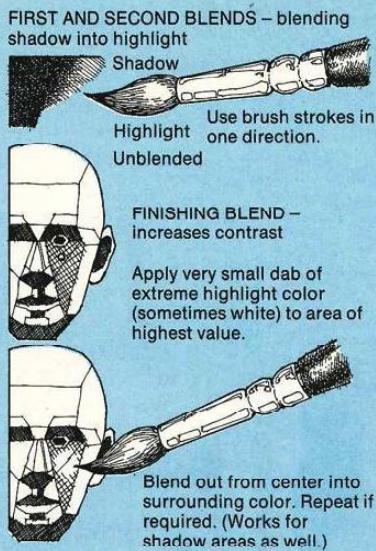


Fig. 8 BLENDING TECHNIQUE

Start by mixing a basic medium flesh tone with Terra Rosa and Titanium White, Fig. 7. Use the back of your hand as a reference. Next add more white and a little Naples Yellow or Jaune Brilliant to make a medium highlight (I call this the "first blend highlight") and more white and Naples Yellow for the "second blend highlight."

For the shadow tones mix equal amounts of Burnt Umber and Permanent Magenta and add this to the basic flesh color to obtain a "first blend shadow" and "second blend shadow."

For women use Flesh Tint as your basic flesh color and add a little Alizarin Crimson to the shadows; everything else remains the same. For blacks use lots of Burnt Umber, for Indians substitute Indian Red for Terra Rosa,

and for Orientals add yellow to the basic mixture.

Shading, highlighting, and blending. I break shading and highlighting into three steps: the first blend, second blend, and finishing blend. The first blend involves laying in and blending the planes of the face and local shadows, and the second is concerned with painting deep recesses and wrinkles and adding contrast. The finishing blend further increases general contrast, smooths tones between planes, and adds details and color.

Start the first blend by moistening your brush with thinner. Mix thinner into the first blend shadow color until it has the consistency of Polly S, perhaps a little thicker. Achieving the correct paint consistency is a matter of experience, and you'll have to experiment to find the consistency that will make the paint flow evenly and smoothly from the brush.

Apply the first blend shadow color, **C**, covering all medium shadow planes of the face. These include the side of the face, underneath the chin, the sides of the nose, the hairline, and under the lower lip. Leave out detail shadows, and don't do the eyes in this step. Use the paint sparingly—a little oil color goes a long way. Next apply the first blend highlight color to areas not covered by the shadow mix, then blend the shadow and highlight colors together.

Moisten the brush with linseed or poppy oil and wipe it off so that the brush is dry, but has a distinct point. Blend the area where the highlight and shadow meet so the transition is smooth, **D**. Use a delicate motion with the brush, generally in one direction, Fig. 8. If blending in one direction doesn't complete the job, go back and blend the other way. The photos are greatly enlarged to show what you'll see through the magnifier. Without magnification the brush marks and irregularities would be too fine to see.

In the second blend you add contrast to the figure with lighter highlights and darker shadows. This step is also when details such as the shape of the eyes and mouth and general recesses such as the laugh lines around the mouth and nose are added. Apply the colors as you did in the first blend, then blend as before, **E** and **F**. Gradually, the face on your figure will begin to look like a real person.

The finishing blend. This finishing step, needless to say, is the most critical and exacting phase of painting the face. It's actually made easier if you can imagine that you are creating character on a real person. During the finishing blend you will increase the contrast, smooth out lines between shadows and highlights, accentuate minute details, and add color.



Meet George DeWolfe

George has been modeling since 1952, and says he remembers the day the Revell Sherman tank came out, his ninth birthday. "I was excited about building this kit—and the figures, especially the sculpted faces, are still pretty good, even by today's standards." He became interested in dioramas in 1956 when his family visited the Smithsonian and he viewed the magnificent examples on display there.

George holds a Master of Fine Arts degree from the Rochester Institute of Technology, and he taught college in the 1970s. He has won national awards for his work, and many of his figures and dioramas are in museums and private collections. He and his wife now produce figures and dioramas full time.

George serves as special projects director for IPMS/U.S.A., and has recently developed a special color wheel for determining highlights and shadows on figures and models. He, his wife Berni, and son Lucien live in Colorado Springs, Colorado.

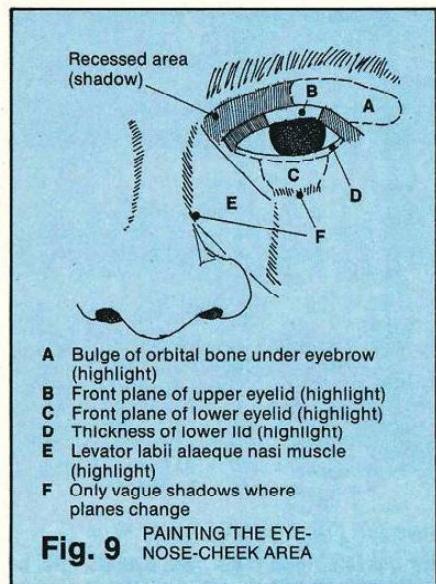


Fig. 9 PAINTING THE EYE-NOSE-CHEEK AREA

Like the overall process of painting the face, I divide the finishing blend into three steps. They are: (1) creating character and expression around the eye-nose-cheek area, (2) adding color to the cheeks and lips, and (3) increasing the contrast of local areas like the chin, nose, and cheeks. This is also the time to add a five o'clock shadow and put more color in wrinkle creases.

Start with the eye-nose-cheek area. The eyes are indeed the windows of the soul, but there is more to creating expression in them than painting the eyeballs. The shape of the eye, Fig. 9, is established by two frontal planes (the upper and lower lids) and four side planes (two upper and two lower), and the highlight on the lower lid and the shadow under the upper lid. Getting this shape right is absolutely necessary to achieve realistic eyes on 54 mm or larger figures. The eyes do not bulge outward from the lids, but sit behind them. This effect is created by rendering the area immediately around the eyes in an exaggerated fashion.

Pay special attention to the high-

light areas around the eyes, painting them lighter than usual so that the planes and features seem to stick out more than normal. Use the paint as it comes from the tube, undiluted with thinner. Apply a speck of off-white paint about the size of the dot on an "i" made with a pen, then blend the speck outward into the small highlight area, for example, the upper eyelid. You may have to repeat this two or three times, and careful observation and evaluation of the effect is crucial.

Next add color to the cheeks and lips. Mix Alizarin Crimson with the basic flesh color to get a medium pink. Apply this to the hollows of the cheeks just below the cheekbone and to the lower lip. Use pure Alizarin Crimson or Permanent Magenta for the underside of the upper lip. Work the cheek color into the flesh tones. Add white to the front plane of the lower lip and blend with the pink. You may need to repeat this once or twice.

Step 3 involves increasing contrast. At this point, generally speaking, the overall appearance of the face is still flat. Increase the contrast by adding white or off-white (a little Naples Yellow or Yellow Ochre added to white will do). Add tiny specks of off-white to the tops of the cheeks, bridge of the nose and nostrils, top of the chin, and perhaps underneath the nose just above the lips. Blend the specks outward as before. Examine the figure under low, diffuse illumination (put your back to the light and hold the figure in your shadow). After this step the face should be just about right, **G**.

Sometimes the shadow recesses may seem dull because of too much Burnt Umber in the shadow mix. Pick up these areas by sparingly adding either Mars Orange or Mars Red and Brown Madder Alizarin, blending well. The area just under the eyebrows may need a touch of Mars Violet, but not too much, as this color is very powerful. Add a five o'clock shadow, if desired, by working a little Payne's Gray into the shadow areas of the cheek and mouth area.

And now, practice. After five or ten faces you should have the idea and be well on your way toward proficiency. Then you'll be able to concentrate on the subtle business of changing the character and expression from one face to the next. When you're ready, buy a good book on anatomy such as the one listed below, and study the elusive details and expressions of the human face. And may moss never grow on your paintbrush!

FSM

REFERENCES

- Rubins, David K., *The Human Figure, an Anatomy for Artists*, Studio Publications, New York, 1953.

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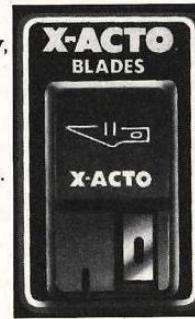
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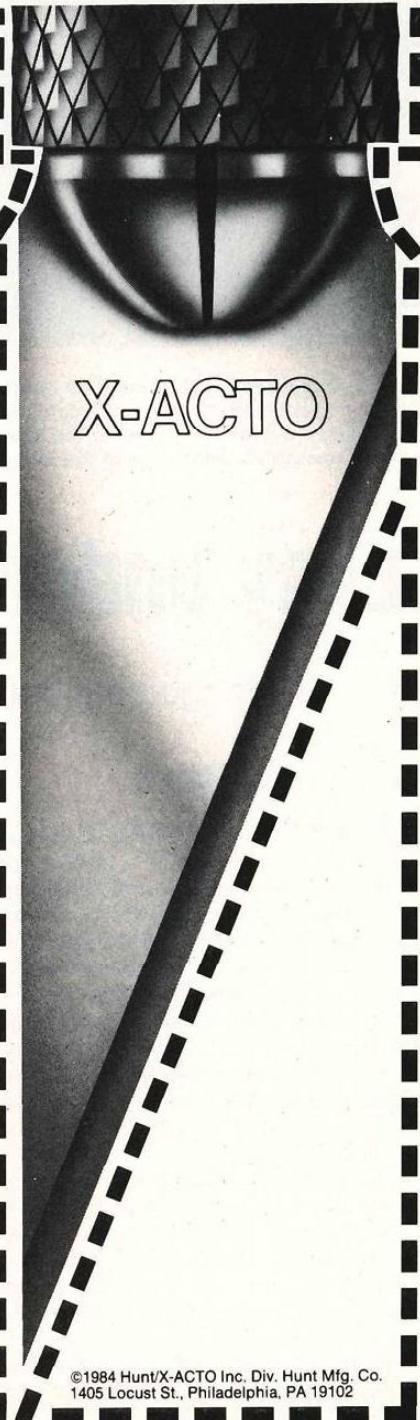
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Fig. 1. This Revell 1/32 scale P-40 model by Charles Krause shows many of the techniques discussed in this article. Note elastic thread brake lines, flattened tires, stretched sprue sway braces for the external tank, and stretched sprue landing gear position indicator projecting from the top of the wing.

Easy underwing details

Getting to the bottom of aircraft models

BY RICHARD WEHR

FOR THOSE FORTUNATE enough to be able to peer at a microscopic blob of shapeless plastic and deftly turn it into a full working throttle linkage for a 1/32 scale P-40, I salute you. However, for the rest of us who peer long hours at the same shapeless blob of plastic and, after uttering many conjugations of four-letter words, turn it into yet another shapeless blob, take heart, there is hope. Here are a few tips for us sausage-fingered modelers to help improve our models.

Almost every aircraft kit has something that can be improved to gain visual interest. Simply building the kit with extended landing gear, long-range fuel tanks, and external ordnance attached to the wings and fuselage is a start, Fig. 1.

Landing gear. Let's look closely at landing gear struts. Many kits have

the oleo sections (the smooth, shiny, almost chrome-like area) molded fully extended, representing an aircraft in flight with the gear down. Photos of real aircraft show that the struts (much like large shock absorbers) are compressed significantly when the airplane is on the ground, Fig. 2. To simulate this, cut out a piece of the oleo section and reglue. Large-scale struts can be reinforced by placing a short length of stiff wire into holes drilled in each section of the strut. The torque link (the V-shaped piece that straddles the oleo section) may need to be modified as well.

Landing gear struts are rarely one color. Unpainted metal gear struts are made from several parts of assorted metals. These can be simulated by mixing black with silver to produce different shades. Even painted gear struts have unpainted oleo struts, nuts, and bolts. Sometimes different-colored land-

ing gear parts are replaced from other aircraft.

The only part of the landing gear that is chrome-like is the oleo strut. Wear marks and dirty hydraulic oil stains can be seen on oleos of real aircraft, but when scaled down they are nearly invisible. Either a bright silver paint or a small strip of aluminum foil can simulate the oleo section. The rest of the struts and wheels are generally dirty. Don't forget, the landing gear is closest to the ground, so the combination of dirt kicked up by the tires and leaking hydraulic fluid builds up soil quickly.

Some aircraft have landing gear position indicators in the wing that are visible from the cockpit. I make these indicators by drilling a small hole in the wing and inserting a red painted piece of stretched sprue for aircraft with the gear down, Fig. 1.

Wheels and tires. When an aircraft is on the ground the weight of the machine squashes the tires so that they appear flattened, Fig. 3. To achieve this effect in small scales, cut or sand off the bottom portion of the tires, Fig. 4. Larger scale tires are usually hollow and can be realistically bulged by pressing the tire against a hot iron, Fig. 5. Watch carefully as you do this to prevent distorting the tires. The final shaping of the bulge and the area that is in contact with the ground can be done with a file and sandpaper.

Mold lines should be removed from kit tires. Although some full-size tires are made in two-piece molds, the flash at the mold seam wears off quickly. Since tires aren't necessarily replaced in pairs, try sanding more tread off one tire to give it a more worn look, or paint one tire a slightly different color.

Don't paint tires black; dark gray is more accurate, and Pactra Hot Rod Primer, Floquil Grimy Black (R-13), or Testor Rubber (1183) is better. You can add weathering to tires too, especially on aircraft that operated from grass fields.

I usually add the wheels after the model is completed and the struts are attached to the aircraft. This way I can rotate the wheel until the flat portion of the tire makes contact with the ground. Then, I place a small drop of super glue on the axle and let it run into the mating surface of the wheel. Always check the tire's "sit" from the side and the front to be sure it is positioned properly.

Sometimes a mark is applied to the tire and wheel to make it easy to detect if the tire has slipped on the wheel, Fig. 6. A red decal cut into a small rectangle can be placed on the rim of the wheel where it meets the tire. Hydraulic brake lines can be added by waxing a

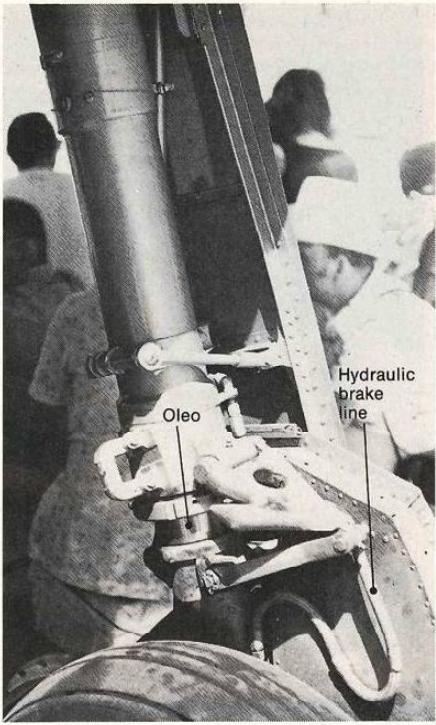


Fig. 2. Little of the chrome oleo section of the landing gear strut can be seen when the aircraft is on the ground. Note hydraulic brake line leading to the wheel.



Fig. 6. A small rectangular piece of tape is placed on the edge of the wheel and tire to detect slippage.

piece of thread and running it down the strut and into the wheel. I prefer elastic thread because it is pliable but holds sharp curves, and has a texture similar to real hydraulic cable, Fig. 7. Running the thread (elastic or regular) through a cake of beeswax eliminates fuzz and lint. Painted stretched sprue or wire-wrap wire can also be used for hydraulic lines.

External fuel tanks. This is easy. After painting the base color on the external tank, paint the area around the filler cap with light brown or gray to simulate overflow or spillage.

Since auxiliary fuel tanks were usually stacked in large numbers, and



Fig. 3. The weight of the aircraft flattens the tires. Model tires should be sanded, cut flat, or heated on an iron to simulate this. Note oil leaks on landing gear doors.

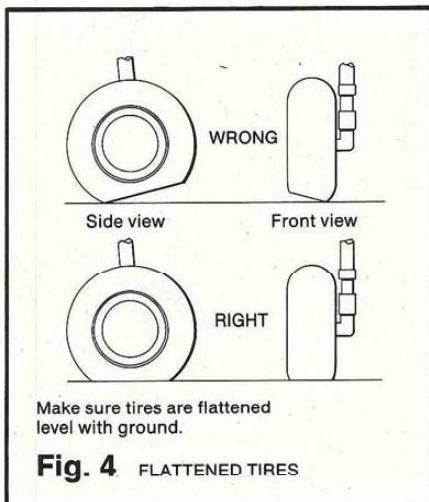
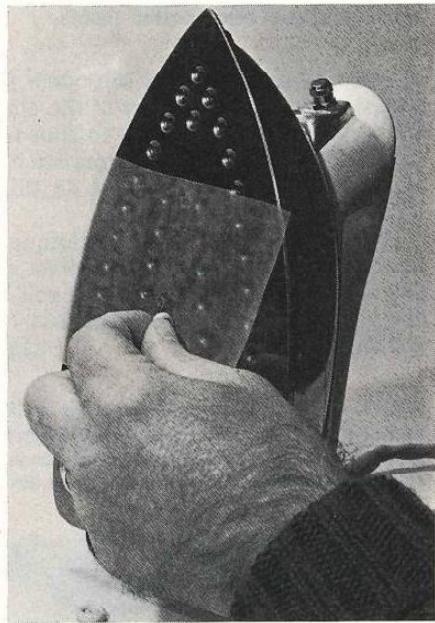


Fig. 4 FLATTENED TIRES

Fig. 5. Place waxed paper on warm iron to keep the kit tire from sticking. Inspect the tire occasionally to prevent distortion.

handled none too gently by ground personnel (when empty), dents and nicks are appropriate, Fig. 8. I make these by heating a nail and gently pressing it into the plastic. These are minor imperfections, not gaping holes. I make sway braces for bombs and external tanks from stretched sprue, Fig. 1.

Weapons. From dropped bricks in World War One to the sophisticated, laser-guided, heat-seeking, wire-guided, computer-controlled missiles of today, just about anything can be hung on an aircraft. The British used to transport urgently needed beer across the Channel in kegs or clean fuel tanks attached to the wing ordnance pylons, Fig. 9.



FINESCALE MODELER: A. L. Schmidt

German fighters carried torpedoes and antitank rockets from half-tracks under their fighter aircraft.

You can make a few simple improvements to external ordnance. First, sand off all seams, file fin edges thin, and add any fin bracing detail which may have been left off the kit parts. Most bombs have a shackle bolt or two which can be added easily in large scales, Fig. 10. Most bombs have a fuse that is armed by a small propeller — a predetermined number of turns of the propeller arms the fuse. A wire attached to the pylon is run along the body of the bomb, Fig. 11, goes through a hole in one of the fuse prop blades, and is held

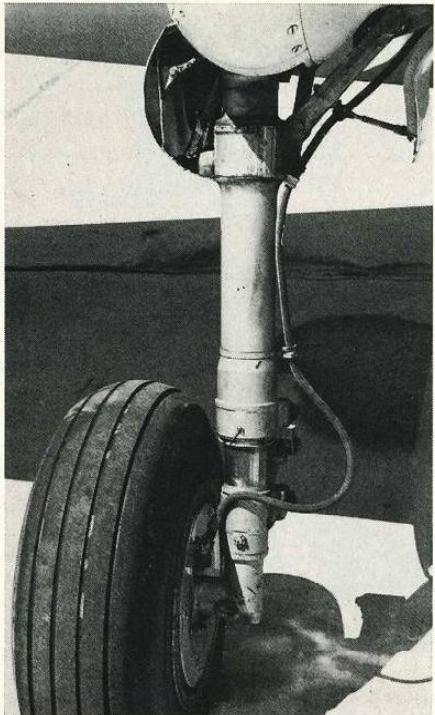


Fig. 7. Hydraulic brake line on a P-40. Note small amount of oleo section visible.

in place by a clip. When the bomb is dropped, the wire pulls out of the clip and hole allowing the prop to spin in the slipstream. These thin wires can be made with stretched sprue as on this 1/72 scale A-10, Fig. 12.

These relatively simple techniques can be used to add detail and interest to any model. With a little practice you'll find yourself building better models — and enjoying it more.

FSM

Fig. 11. A 500-pound bomb attached to the center line of a P-40. Note sway braces, fuse arming wire, and nose and tail fuses. Two fuses decreased the chances of a dud.

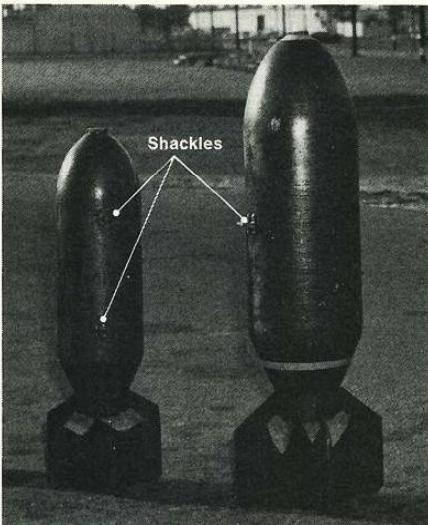
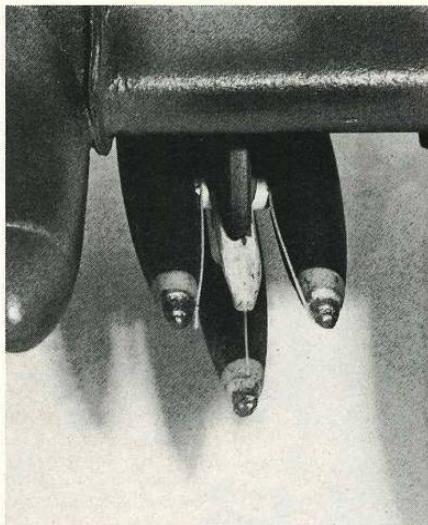
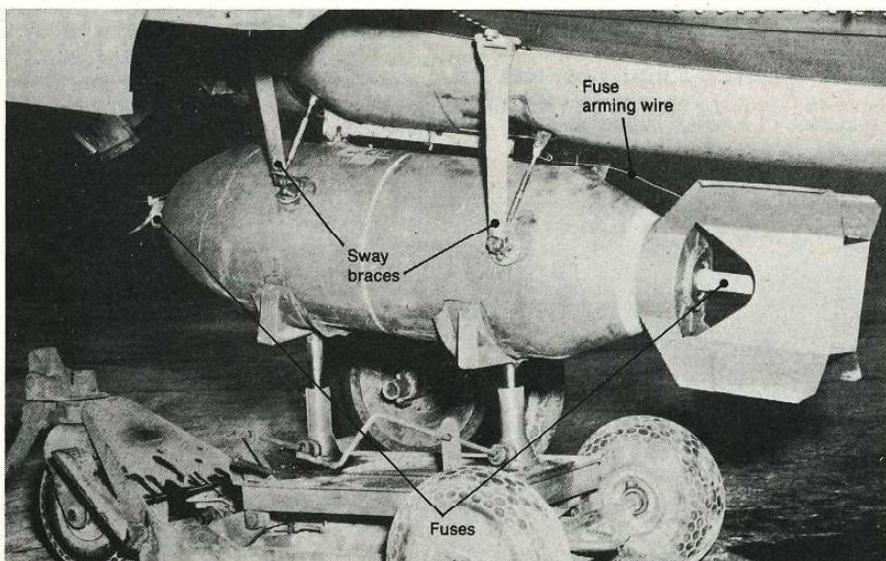


Fig. 10. These WWII-vintage bombs show two shackles (left) and a single shackle (right). The shackles attach the bomb to the pylon or bomb bay rack.

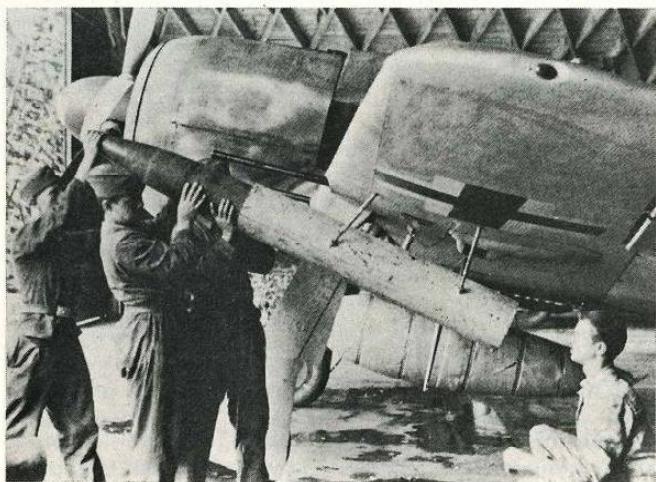


FINESCALE MODELER: Paul A. Erler

Fig. 12. Thin stretched sprue simulates fuse arming wires on this brace of 500-pound Mk. 82s on a 1/72 scale Monogram A-10 Thunderbolt II.



Aero Publishers



Courtesy Squadron/Signal Publications "Fw 190 in Action"

Fig. 8. The external tank on this Fw 190 has seen better days. Note dings and dents. Armorers are loading a 21 cm mortar round into a Wfr. Gr. 21 launch tube.



Aero Publishers

Fig. 9. Beer is loaded into a clean external tank for ferrying to troops across the Channel after the invasion.



Pat's 1/72 scale Heller T-28B Trojan features a vacuum-formed canopy he made on his homemade machine. Note male pattern on wooden pedestal.

FINESCALE MODELER: Paul A. Erler

Stretch forming and vacuum forming in plastic

Making new parts is easy with these simple, homemade tools

BY PAT PERCIVAL

AT SOME POINT every modeler gets tired of building projects straight out of the box and begins to look around for new worlds to conquer. Some superdetail existing kits, others modify kits into lesser-known variants, and a select few even build models for which no kit is made. Following any of these paths is going to require fabricating many parts that cannot be found in anyone's spare parts box.

Two easy ways to make custom parts are stretch forming and vacuum form-

ing from plastic sheet. These methods are not mysterious or complicated, but are quick, easy, and add a lot of flexibility to your modeling skills. If you are one of the lucky few who owns a discontinued Mattel Vac-U-Form machine, you've known this for years. For those who don't, read on.

Stretch forming and vacuum forming are similar; a sheet of plastic is softened by moderate heat and formed over or into a mold. When the plastic cools and hardens it is removed from the mold. The excess plastic is then cut away, leaving a well-formed copy.

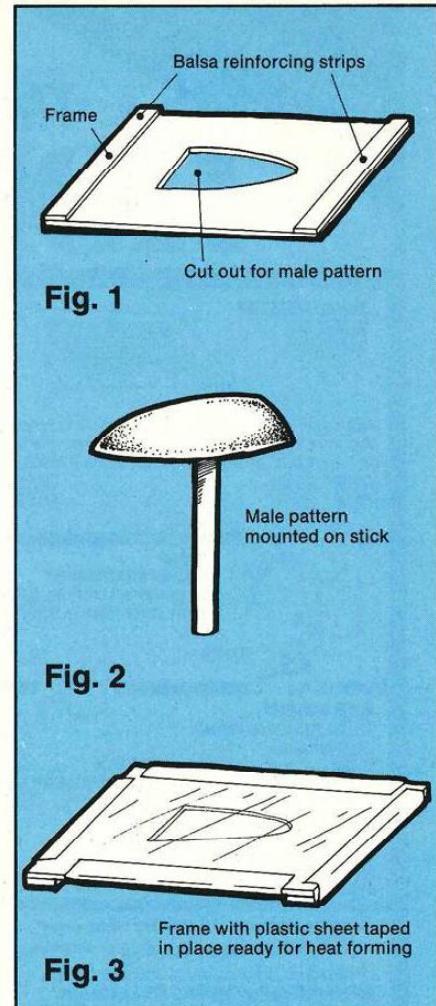


Fig. 1

Fig. 2

Fig. 3

Canopies and windshields are the most common subjects that modelers replace; some kit canopies are too thick, and a stretch- or vacuum-formed copy is easier to cut open to show detailed interiors. Fortunately, our radio control modeler brethren fabricate a lot of their canopies too, so hobby shops have a good supply of clear plastic sheets in a variety of thicknesses.

The thickness of the plastic depends on the size and application of the part that you're forming. Sheet styrene .010" or .020" thick is ideal for 1/72 scale canopies or air scoops, while .060" sheet would be used for such parts as cowls. A good variety of clear sheet plastic is distributed by Sig. A pack of assorted thicknesses of white sheet styrene is available from Squadron Mail Order.

Different methods. We're going to discuss two methods of copying parts: stretch forming and vacuum forming. Common to both methods is a male pattern over which the plastic is formed. Needless to say, the quality of the part you end up with depends on the quality of the original pattern.

For most aircraft the kit canopy can serve as the male pattern for the copy. I

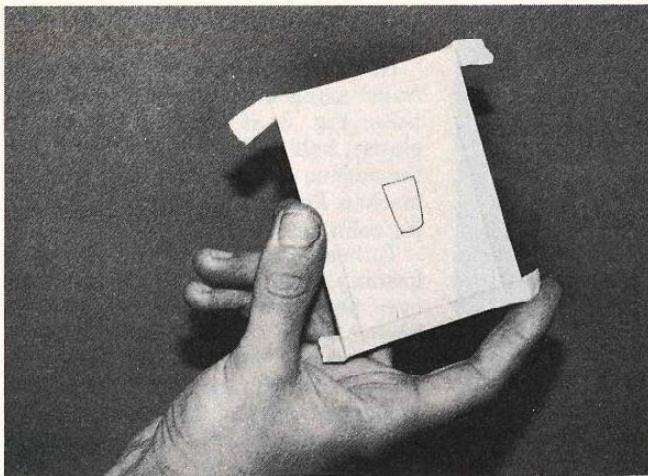


Fig. 4. An aiming point for the insertion of the male pattern is drawn on the plastic with a pencil or marker.

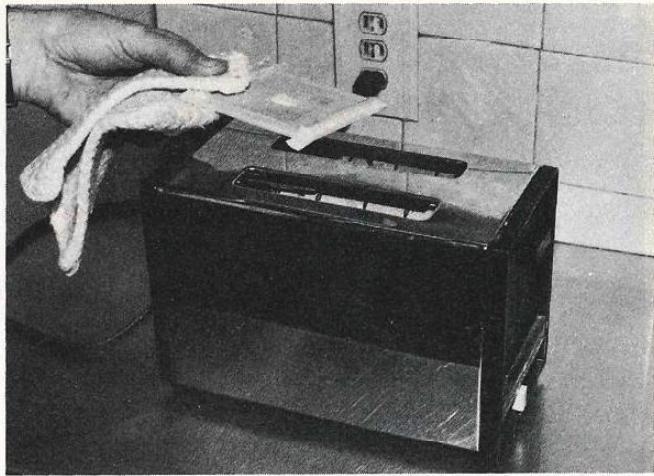


Fig. 5. Pat uses a toaster to heat the plastic in the frame. Note hot pads to protect fingers.

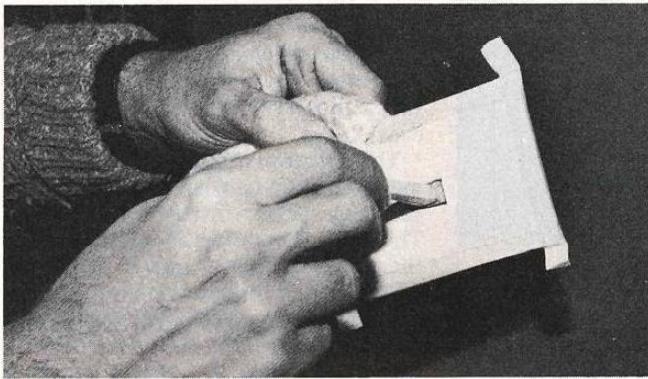


Fig. 6. The male pattern is pushed into the heated plastic.

reinforce my kit canopies with filled epoxy to keep heat from distorting them during the forming process. Although many good filled epoxies are available, I prefer to make my own from HobbyPoxy 2 and K&B Micro-balloons. This gives me greater control over the density so I can tailor it to different applications. Both materials are available at hobby shops that cater to flying airplane modelers. I remove the canopy framing with 600-grit wet or dry sandpaper to make a cleaner pattern. Framing is easily added to the canopy later using paint, tape, or foil.

If you're scratchbuilding or modifying kits, a male pattern can be made from balsa. Shape the pattern with 220-grit sandpaper, test fit often, and sand again with 400-grit. Remember to make the pattern just a trifle small to allow for the thickness of the plastic to be formed over it.

If I need to add putty I first rub super glue onto the surface of the balsa male pattern. (I prefer Elmer's Wonder Bond.) Balsa is much softer than putty; a coat of super glue over the balsa makes it nearly as hard as putty, preventing uneven sanding. (Keep plenty of super glue remover handy when doing this.)

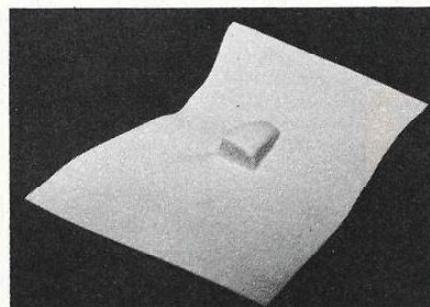


Fig. 8. A stretch-formed air scoop in the middle of a sheet of .020" styrene.

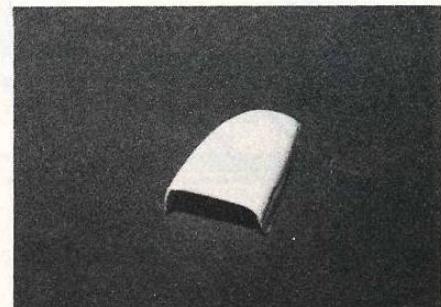


Fig. 9. The finished air scoop is carefully cut out of the sheet, filed, and sanded to shape.

After the super glue dries, sand the pattern with 400-grit sandpaper, apply a coat of putty — I use Squadron Green Putty — let it dry, and give the pattern a final once over with 400-grit sandpaper.

Stretch forming is the simplest method of producing parts — no vacuum is needed. It involves a male pattern (which we just made), and a frame made from $1/16$ " or $1/8$ " balsa sheet, depending on the size of the part to be molded. The frame supports the plastic and ensures that it conforms to the sides of the pattern. Cut a piece of balsa

sheet an inch or two wider and longer than the male pattern. Trace the pattern on this sheet and cut out an aperture with a knife. Make sure the male pattern can pass easily through the aperture with about $1/32$ " clearance on all sides. Glue two balsa braces across the grain on one side of the frame, Fig. 1. These add strength since the frame undergoes considerable stress.

The male pattern now has to be mounted on a stick, Fig. 2, so that it can be pushed into the heated plastic without burning your fingers. I use 3M's quick-setting epoxy to attach the

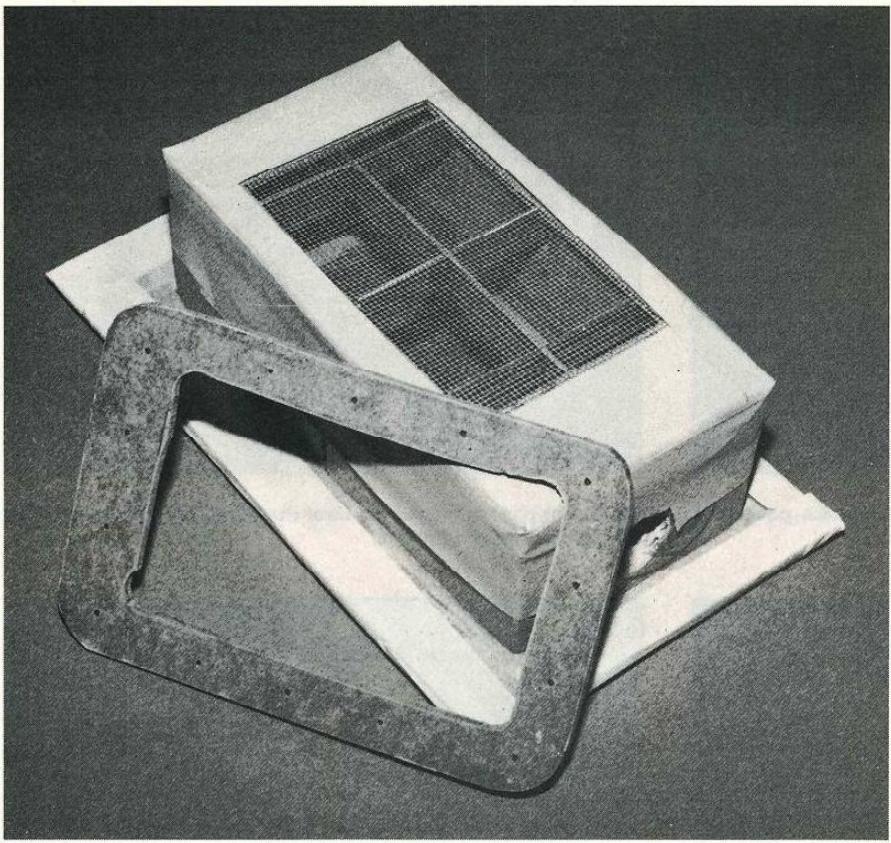


Fig. 10. Pat's homemade vacuum-forming machine. Note the balsa reinforcing structure under the screen. The frame in the foreground is made from hardboard.

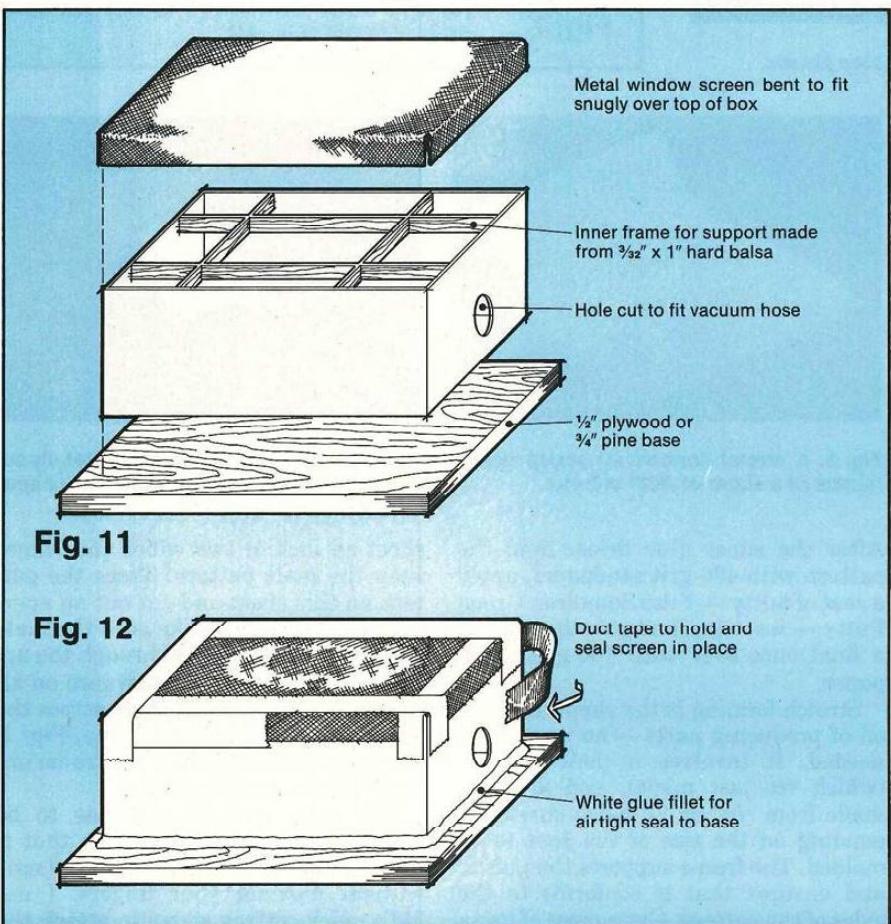


Fig. 11

Fig. 12

stick, but any good 5-minute epoxy will do.

Next, attach the plastic sheet to the frame using masking tape on all four sides, Fig. 3. If you're using opaque plastic, hold it up to a light and trace the outline of the cutout with a felt tip marker, Fig. 4. This gives you an aiming point for inserting the male pattern.

To heat the plastic and soften it for forming, hold the plastic in its frame over an electric toaster or an oven burner set on low, Fig. 5. If you go the oven burner route, be extremely careful and hold the frame with a padded, flameproof mitten. The plastic should start to soften in a few seconds and will begin to sag into the cutout. In a few more seconds as it softens further, this process will reverse and the plastic sheet will shrink slightly and pull taut across the aperture — you may even see a thin wisp of smoke. The plastic should now be ready for forming, but don't take this for granted. Poke it with the eraser end of a pencil to make sure that the plastic is the proper rubbery consistency.

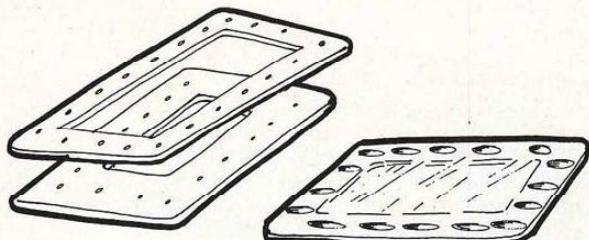
The moment of truth. Push the stick-mounted male pattern into and $\frac{3}{16}$ " beyond the cutout in the frame, Fig. 6. This pulls the plastic sheet tightly over the pattern, Figs. 7 and 8. If the finished product is not to your satisfaction simply reheat and remold. Now all that has to be done is to trim away the excess plastic, Fig. 9. I find it easier to leave the male pattern inserted while doing this, especially if the canopy is to be cut into sections.

Stretch forming is good for small parts. The thickness of plastic sheet used in this process should not exceed about .020" and the parts formed should be a maximum of about 2" by about $\frac{3}{4}$ " — a fairly large range for most modelers' needs.

Vacuum forming. For larger parts and heavier plastic sheets, you will need to use the vacuum-forming method. This, of course, requires the appropriate vacuum-forming equipment, but don't panic; you probably own the most complex piece of equipment needed — a vacuum cleaner!

The rest of the equipment is easy to build, Fig. 10, and the forming process is simple. Figure 11 shows the construction of my vacuum box. Start with a shoe box-size cardboard box and remove the bottom. Build an inner frame from $\frac{3}{32}$ " x 1" hard balsa. Make sure that this is securely glued in place. Cut a piece of window screen (metal, not plastic) slightly larger than the bottom of the box and fold the sides down so the screening fits like a lid. Use duct tape to hold this in place and form a reinforced border.

In one end of the box cut a circular hole slightly smaller than your vac-



1/4" hardboard frames for various sizes of plastic sheet

Fig. 13

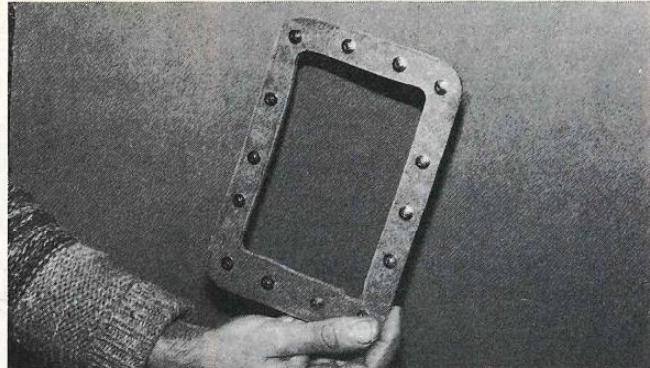
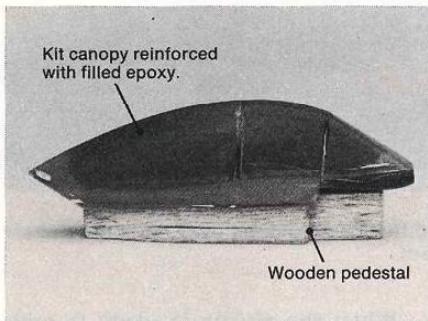


Fig. 14. Clear plastic is attached to the frame with thumbtacks.



FINESCALE MODELER: Paul A. Erler

Fig. 15. Each male pattern should be placed on a pedestal to allow the plastic to completely form around it.

uum cleaner hose fitting; the hose nozzle will be forced into it later. Reinforce this hole with duct tape. Next, make a $\frac{1}{2}$ " plywood or $\frac{3}{4}$ " pine base slightly larger than the box. This will make the box sufficiently heavy to prevent it from sliding around while in use. Secure the box to the base with several applications of white glue to ensure an airtight seal. Figure 12 shows the final assembly. There, that wasn't so hard, was it? This plan can be modified to suit the materials that you have on hand.

Vacuum frames. All that needs to be made now is a frame to hold the plastic sheet during the softening phase. A good material for this is $\frac{1}{4}$ " hardboard (Masonite is one brand). Cut three or four pieces about the same size as the top of the box you've just made. Cut out an aperture using a saber saw, leaving at least a 1" border. Cut progressively smaller apertures in the other frames, Fig. 13. The various size frames hold different sizes of sheet plastic; which one you use depends on the size of the part to be formed.

Next, use a $\frac{1}{32}$ " bit to drill a series of holes around the perimeter of each aperture. Thumbtacks will be pushed through the sheet of plastic into these holes to hold the plastic during forming, Fig. 14.

To get a good copy from your machine, the male pattern should be

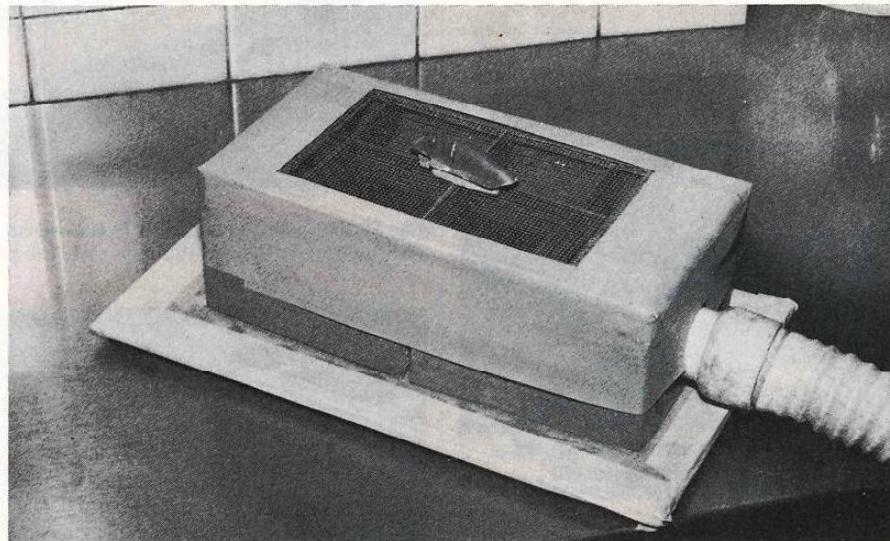


Fig. 16. The male pattern on the screen, ready for the forming process.

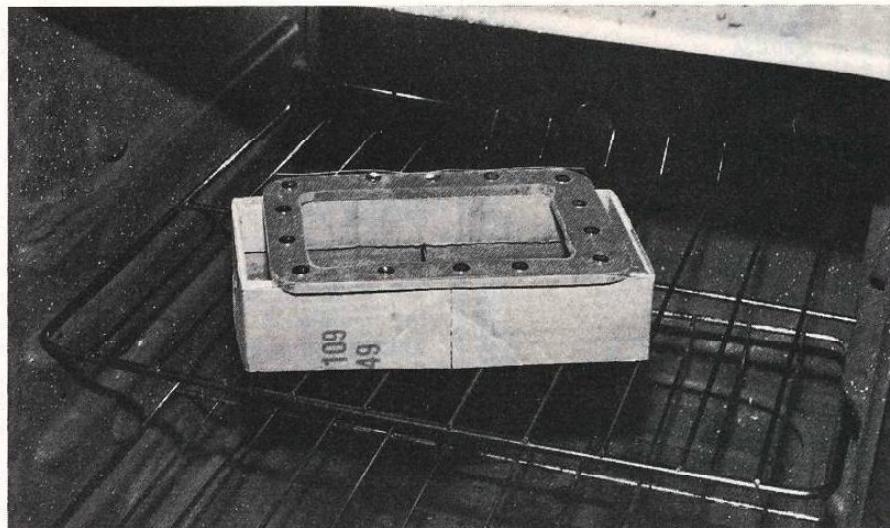


Fig. 17. A cardboard box is used to keep the frame off the hot oven racks.

placed on a sturdy pedestal, Fig. 15. This ensures that the heated plastic is pulled over the entire pattern, defining the edges for easier trimming. Make sure that the pedestal supports the pattern along its entire length. If the pat-

tern teeters or moves during the forming process, the molded copy will distort. Also, build up the pedestal under sharp corners so they don't puncture the plastic and ruin the vacuum.

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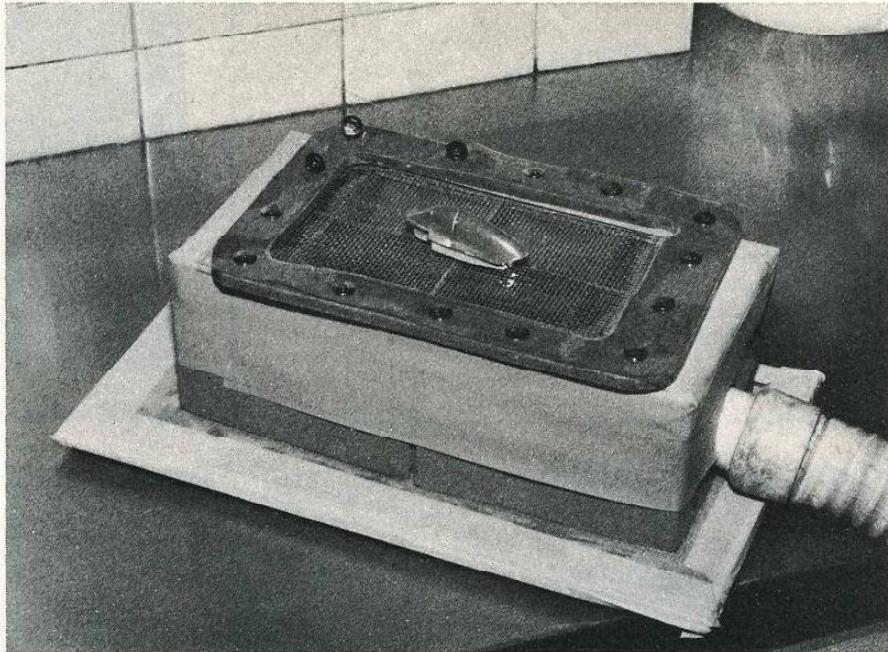


Fig. 18. The vacuum cleaner is turned on and the frame placed over the male pattern. The hot plastic is sucked down over the pattern.

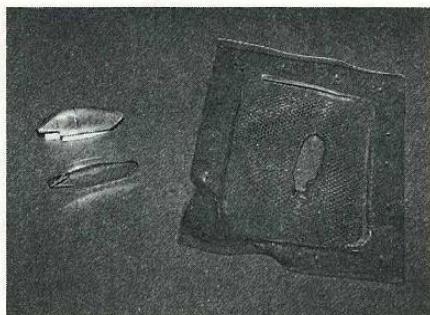


Fig. 19. Pat trims and opens the canopy while it's still on the male pattern. The support of the pattern prevents the thin plastic from collapsing under the knife blade.

you're ready to start forming. Preheat the oven to 250 degrees. While you're waiting for the oven to come up to temperature, set up your vacuum box. Plug the vacuum hose into the hole in the side of the box and place the pattern in the middle of the screen, Fig. 16. Thumbtack a sheet of plastic to the frame and place it in the oven to soften. Use a homemade wooden or cardboard rack to keep the sagging plastic from touching the rungs of the oven rack, Fig. 17.

As the plastic heats, watch closely for the moment when the plastic becomes taut after the initial sagging. Poke it now and then until you're satisfied that it has a suitably moldable, rubbery consistency. Different thicknesses of plastic will soften at different rates so never take your eyes off it during this stage. Experience will make it easier for you to judge how long the plastic should heat.

When the plastic is ready to mold, flip on the vacuum cleaner. Wearing your padded mitten, snatch the frame with the soft plastic on it from the oven and lay it on top of the pattern. In the blink of an eye the plastic will be sucked down tightly over the pattern, giving you a perfect part, Fig. 18. It's almost anticlimactic. Turn off the oven and the vacuum, pull the plastic sheet from the frame (watch out for those hot thumbtacks), and cut out the part, Fig. 19.

In no time at all you'll be a vacuum-forming fool, no longer content with many of the kit-provided parts. You'll be making your own canopies, wheel wells, spinners, air scoops, landing gear doors, and even entire fuselages. With this technique in your bag of tricks you'll be able to improve stock kits — and you'll have the freedom to model subjects that may never be kits.

FSM

SOURCES

Borden Inc., Columbus, OH 43215.

HobbyPoxy 2, Petit Paint Co., 36 Pine Street, Rockaway, NJ 07866.

K&B Manufacturing, 12152 Woodruff Avenue, Downey, CA 90241.

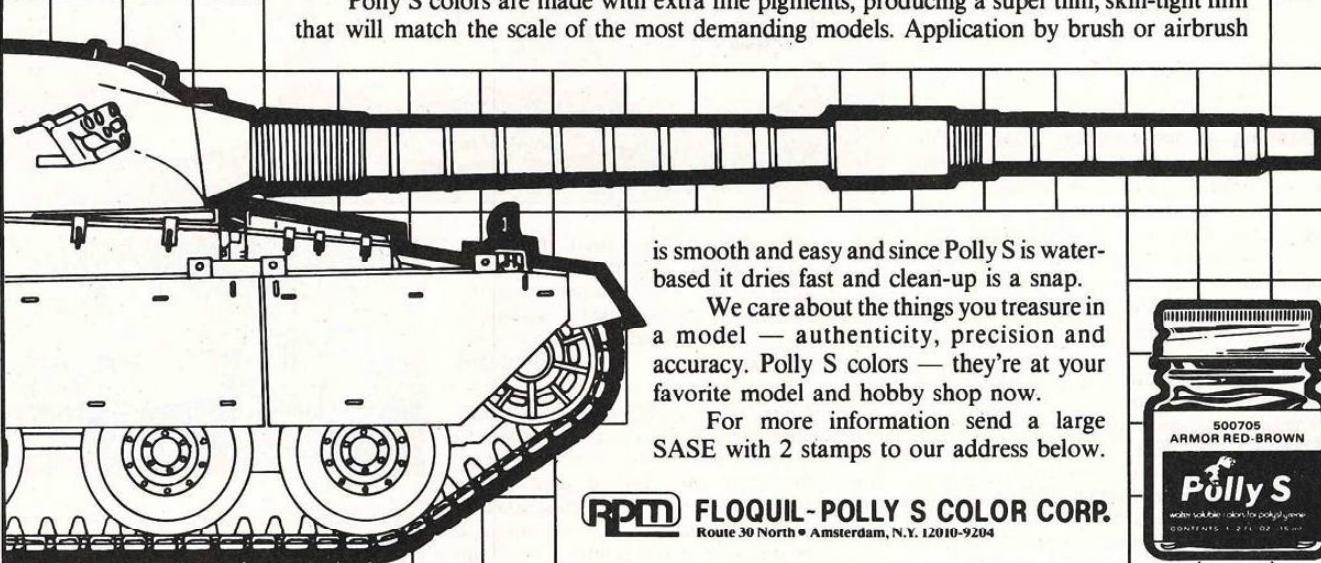
Sig Manufacturing Co., Inc., Route 1, Box 1, Montezuma, IA 50171.

Squadron Mail Order, 1115 Crowley Drive, Carrollton, TX 75006.

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Got a modeling problem? FSM Clinic is here to help. FSM's staff will try to answer any modeling question and solve any modeling problem you have. FSM Clinic, however, is not a reference service for markings, unit histories, and other non-modeling, research questions. Send your questions to FSM Clinic, FINESCALE MODELER, 1027 North Seventh Street, Milwaukee, WI 53233.

Conducted by Paul Boyer

Cleaning up for acrylics. FSM author William Tilton suggests using Polly S Prep instead of mineral spirits or rubber cement thinner to clean plastic before painting with acrylics (see first item in FSM Clinic November/December 1984). Prep is an alcohol-base cleaner that dissolves oils, reduces static electricity that attracts dust, but doesn't harm styrenes.

Paul Boyer

More on Napoleonic figures. Since Jose Azzari's question about 1/72 scale Napoleonic figures appeared in the January/February 1985 FSM Clinic, ESCI has released a series of 1/72 scale plastic Napoleonic figures. They are Waterloo French Guard (0214), Waterloo Highlanders (0215), Waterloo field accessories (0216), Scotts Greys (0217), Polish lancers (0218), and British and French artillery (0219).

P. B.

Plans for merchant ships. Where can I obtain plans and drawings for merchant ships? Most of the plans I have found deal with warships.

James Petty

You should be able to get plans from Repla-Tech International, 48500 McKenzie Highway, Vida, OR 97488, and from Taubman Plans Service, 11 College Drive, Box 4G, Jersey City, NJ 07305. Both have extensive lines of drawings and model plans on all types of ships.

P. B.

Yellowing white paint. My white paint always tends to grow yellow in the bottle or on the model as it gets older. Is there any way to prevent this?

John Odin

I add one or two drops of Floquil Big Sky Blue (R56) to a 1-ounce bottle of Reefer White (R11). This is just enough to counteract the tendency of the paint to yellow due to its Glaze (binder) content. This works with any white paint; just make sure you use a compatible light blue with your favorite white. Don't mix Floquil with Pactra, Polly S with Testor, and so forth.

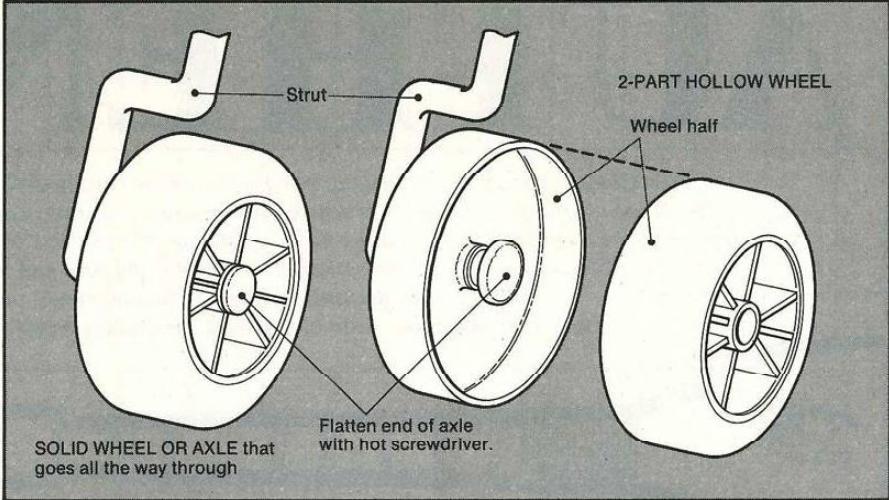
P. B.

Gunmetal. How do modelers get that realistic gunmetal effect on 1/35 scale machine guns?

Thomas Dinackus

Try Metalizer or Liqui-a-plate paints. These can only be airbrushed, but after you let them dry for $\frac{1}{2}$ hour, you can buff the gun with a soft cloth, achieving a realistic metallic finish. Both lines have a gunmetal color. Another way is to paint the guns flat black and accent them with Rub 'n Buff, a waxy, metallic paste.

P. B.

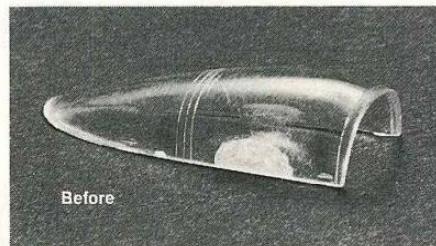


Keep 'em rollin'. How can I attach the wheels to my Revell 1/32 scale F-16A kit so that they will roll? Also, I have a canopy with a blemish caused by plastic cement. Is there any way to eliminate it and still keep the canopy clear?

Rosauro Ona

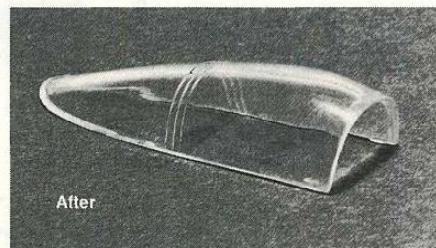
I don't recommend rolling wheels on aircraft models because they may tempt you to scoot the model along a shelf, table, or floor; that's fine, but the landing gear struts really weren't made for this much stress and they may break. But, if you want them to roll, here's how. I'm not familiar with the Revell 1/32 scale F-16 kit, but it probably has two-piece wheels. If the axle on the strut doesn't go all the way through the wheel, flatten the end of the axle with the inside half of the wheel mounted. Then reattach the other half of the wheel. If the axle goes all the way through, simply flatten the protruding end.

It will take a bit of work to solve the canopy problem. First, sand the blemished area with wet 400-grit sandpaper. Move the sandpaper in little circles. It may take a while, but you should be able to smooth out the flaw. Next, repeat this with wet 600-grit sandpaper, first pressing hard, then gradually easing up on the pressure, again sand-



ing in tiny circles. Then use plastic polish, rubbing compound, or toothpaste (not a gel type) to polish the area smooth. Keep polishing (it may take a while) until the flaw is invisible. As a final touch, apply a coat of Future acrylic floor polish (another brand is Brite) with a soft brush.

P. B.



Static grass. Sheperd Paine mentions static grass in his book *How to Build Dioramas* (Kalmbach) but I can't find it in my local hobby shops. Where can I get it?
Robert Claypoole

Vintage Reproductions, Box 7098, Colorado Springs, CO 80933, sells static grass in flexible bellows called Puff'N'Paks. There are summer and winter assortments in two sizes. John's Lab, 4915 Dean Street, Woodstock, IL 60098, has 11 colors of static grass. William K. Walther's, Inc., 5601 West Florist Avenue, Milwaukee, WI 53218, imports three foreign static grass products: Kibri has seven colors, Hannes Fischer has summer and autumn colors, and Noch has five colors with a dispenser.
P. B.

Europe I colors. Does any paint manufacturer make the Europe I colors FS 34092 Green and FS 36081 Gray? *Gary Goldblatt*

Recently, Testor has released FS 34092 in its Model Master paint line, and the only company to produce FS 36081 is Compu-color (CAC 14). Compu-color is available from Rosemont Hobby Shop, P. O. Box 139, Trexler Mall, Trexlertown, PA 18087.
P. B.

Leaky syringe. I like to use a hypodermic syringe for applying liquid cement but the cement leaks out of the needle. What's going wrong?
Gary Douglass

It sounds to me as if your syringe problem is due to a bad seal on the end of the plunger. The liquid cannot escape from the needle unless it is replaced by air. If the seal is shot, air can enter the syringe and allow the liquid to escape. Try replacing the entire syringe with a fresh one. You may find that the seal has a short life when exposed to volatile chemicals like liquid cement.
P. B.

Take it all off. How can I take decals and paint off an old model?
Don Lewis

There are a number of ways to remove paint and decals from built up models. First, purchase a spray can of Easy-Off Oven Cleaner and spray a liberal coating of the stuff on your model. This is a caustic substance, so make sure you do this outdoors or in a ventilated garage. Watch where the spray goes, too. I got a small plastic washtub (Rubbermaid) and spray models in it. Let the goo soak in for at least six hours, then scrub the model with an old toothbrush. The old paint and decals should come off easily, but if they don't, apply another coat of Easy-Off and repeat the procedure.

There are three commercially available hobby paint strippers: Accustrip from SNP Industries, 17 Hudson Road, Bolton, MA 01740; Paint Strip from Custom Car Engineering, R. D. 1, P. O. Box 199C, Creamridge, NJ 08514; and Scalecoat Paint Remover, 177 Wheatley Avenue, Northumberland, PA 17857.

Another method is to soak the model in an industrial strength cleaner such as Tenant 658 or Johnson Wax J-600 used full strength. I've also heard of soaking the model in brake fluid (effective but difficult to do), and soaking it in chlorine bleach (smelly and it affects some plastics).
P. B.

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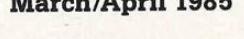
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Modeling the Jumbo assault SHERMAN M4A3E2

A 1/35 scale conversion to an unusual variant

BY DAVE MUSIKOFF

EARLY IN 1944 U. S. forces had no heavy tanks for the planned invasion of occupied Europe. The standard American medium tank, the M4 Sherman, was too thinly armored and too lightly armed for the assault role. Time was short and the options few.

One option was to uparmor and upgun the late-production M4A3. The new tank was designated M4A3E2, indicating a temporary design to be employed while a better weapon was developed. Modifications included an all-new cast turret with sides, front, and rear approximately 6" thick. Extra 1½" armor plates were welded over the front and sides of the hull, making these surfaces 4" and 3" thick, respectively. A huge, angular gun mantlet 7" thick on its front surface was fabricated from flat plates, and a new, heavy differential-final drive housing 5½" thick was designed for the nose.

The new armor made the M4A3E2 seven tons heavier than a standard M4A3. To handle the extra weight, lower final-drive gear ratios were used,



Though far from colorful, Dave's Jumbo is an unusual and impressive model. Unlike the standard T-23 76 mm turret, the Jumbo turret had no pistol port on the side.



Figs. 1 and 2. Dave first mounted the 75 mm gun from the Tamiya M4A3 (left) in his Jumbo, but settled on the longer and



more powerful 76 mm barrel from the Italeri M4A1 (right). Many Jumbos were modified in the field with the bigger gun.

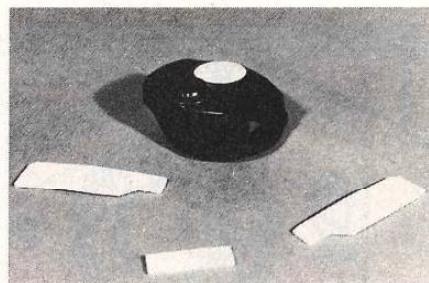
lowering maximum speed from 26 to 22 mph, and diminishing operating range by roughly 100 miles. Extended duck-bill grousers were fitted to the tracks as standard equipment to reduce the ground pressure. As the main function of the new tank was to be infantry support, the standard 75 mm M3 gun was chosen over the more powerful 76 mm gun, which would have been more effective against enemy armor.

A total of 254 M4A3E2s was manufactured from May to July 1944. Except for a few kept in the U. S. for testing, all were shipped to Europe for the drive into Germany. The tank first saw action during the July 1944 breakout from the Cherbourg Peninsula, Operation Cobra. Nicknamed "Cobra-King" as a result of the operation, the name failed to stick; instead the M4A3E2 was — unofficially — the "Jumbo."

Although far from perfect, the Jumbo Sherman proved effective, being all but immune to enemy antitank guns at longer ranges. Even the vaunted German Panther could not penetrate the frontal armor at long range, making the E2s ideal for leading columns of standard tanks. Despite maintenance problems brought on by its weight, the vehicle proved popular with crews, largely because the Jumbo could absorb terrific punishment and bring them through it alive.

Late in the campaign some M4A3E2s were rearmed by field workshops with the high-velocity, long-barreled 76 mm gun, improving their ability against enemy armor. During the Battle of the Bulge the first U. S. armor to break through to the encircled American paratroopers at Bastogne were Jumbos attached to Patton's 3rd Army.

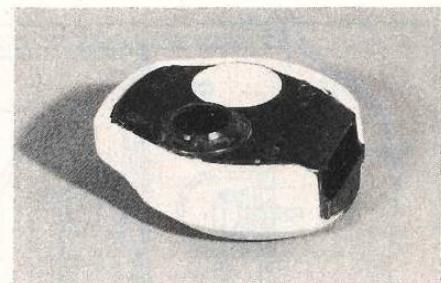
The Jumbo conversion. There is no kit of the M4A3E2, but with a little work you can build an authentic model of this Sherman variant. The basis of my conversion is Tamiya's 1/35 scale M4A3 (kit MM-222), which provides about 75 percent of the parts. Other parts come from Italeri's M4A1 (kit No. 225), and the rest consists of .010", .020", .030", .040", and .080" sheet sty-



Figs. 3 and 4. (Left) The Italeri turret with the loader's hatch hole plugged with .010" styrene, and the first layer of extra armor ready to be cemented to the sides and rear. (Right) The same turret after adding both .080" armor layers.

rene, body putty, and a few nondescript pieces from the spare parts box. The conversion consists of beefing up the turret, building a new gun mantlet, and adding extra armor to the hull front, sides, and final-drive housing, Figs. 1 and 2.

Enlarging the turret. The shape and layout of the Jumbo turret were similar to the standard T-23 Sherman turret, which comes in the Italeri kit. You will need the upper and lower turret pieces (parts 82 and 85), the mantlet fairing (75), commander's hatch cover (86), and the lift rings (91 and 92). Don't use the antenna mount — it's a British type, incorrect for the American Jumbo.



To begin, cement the upper and lower turret halves together, add the mantlet fairing, and let dry. Remove the turret vent and machine gun brackets from the turret rear, fill the tiny hole in the left front roof, and file off the details just behind the hole. Using a circle template or dividers, cut a 1"-diameter circle from .010" plastic and cement it into the large round hole on the left side of the turret roof, Fig. 3.

Remove the turret ring lugs from the Italeri turret so it will fit the Tamiya hull. Protect the commander's cupola by covering it with several layers of masking tape so it won't be mangled while the rest of the turret is reworked.

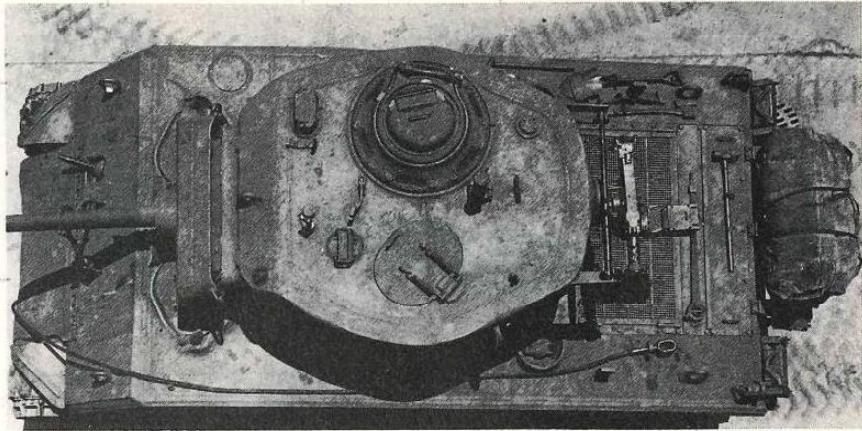
Using the templates, page 47, cut



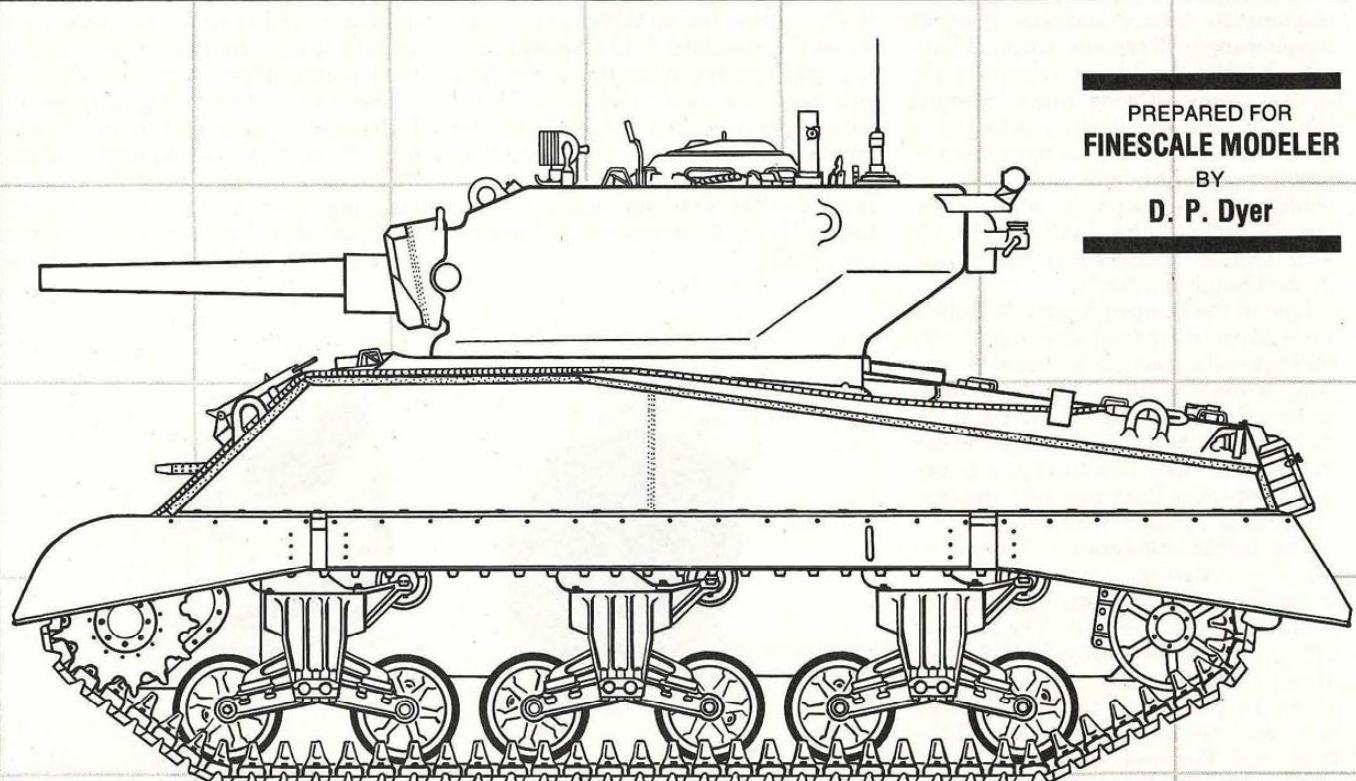
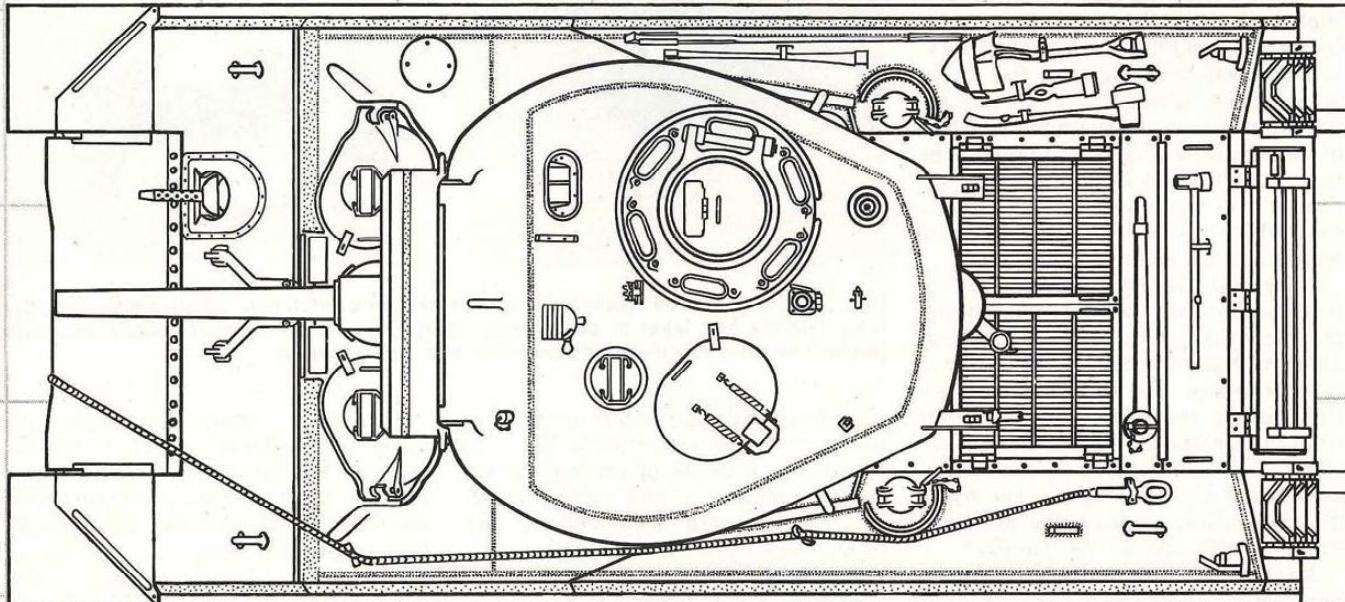
Fig. 5. The stock Italeri turret and the completed Jumbo turret. The mottled effect is caused by the model airplane dope used to add cast texture to the surface.

1/35 SCALE

A useful overhead view of a Jumbo taken during the development of the tank in June 1944. The huge turret, the protruding gun mantlet, and the extra plates added to the hull show up well. Note the machine gun stowed on the rear of the turret, the tow cable on the left side of the hull, and the rest of the stowed equipment.



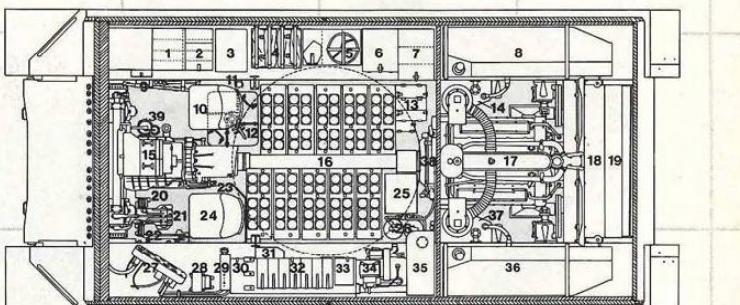
U. S. Army Signal Corps, Richard Hunnicutt collection



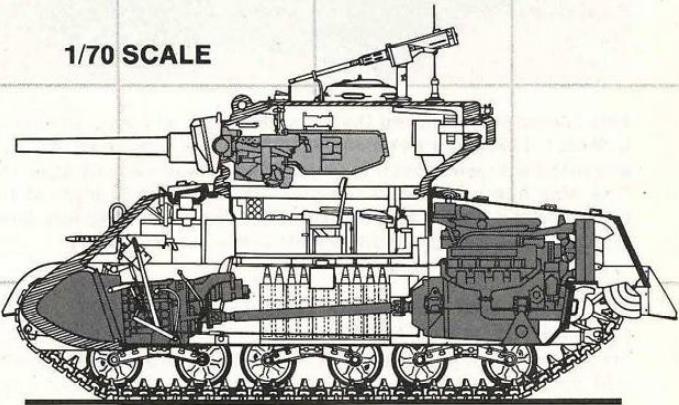
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D. P. Dyer

KEY TO HORIZONTAL CROSS SECTION MEDIUM TANK M4A3E2 75 (W)

- 1 Eight boxes .30 cal. ammo, 250 rounds each.
- 2 Eight boxes .30 cal. ammo, 250 rounds each. First aid kit above.
- 3 Spare parts.
- 4 Five haversacks.
- 5 Canvas bucket and gunner's quadrant on top of three water cans.
- 6 Stove and rations.
- 7 Six .50 cal. ammo boxes, 100 rounds each. Manuals above.
- 8 Right-hand horizontal fuel tank.
- 9 .30 cal. tripod. Two .30 cal. MG barrels.
- 10 Bow machine gunner's seat.
- 11 Spare .50 cal. MG barrel.
- 12 Floor escape hatch.
- 13 Tools and spare parts boxes.
- 14 Right-hand vertical fuel tank.
- 15 Driver's head cover. Four periscopes. Six spare periscope heads above gearbox.
- 16 Transmission shaft cover. Wet stowage for 50 rounds of 75 mm ammo both sides, full width of lower hull.
- 17 Ford GAA V-8 engine.
- 18 Twin radiator housing.
- 19 Cooling air deflectors upper and lower.
- 20 Foot throttle pedal.
- 21 Steering levers and linkage.
- 22 Clutch pedal.
- 23 Gear change lever.
- 24 Driver's seat.
- 25 Track tools.
- 26 Two 10 lb. CO₂ containers for fixed fire extinguishers.
- 27 Instrument panel.
- 28 Regulator for auxiliary generator.
- 29 Master switches.
- 30 Driving lights stowage position (not required M4A3E2) on top of battery box. Battery box runs under 32 and 33.
- 31 Flare projector and flares.
- 32 Seven .30 cal. ammo boxes 250 rounds each.
- 33 Six 2" smoke bombs.
- 34 Auxiliary generator.
- 35 Fuel tank for auxiliary generator.
- 36 Left-hand horizontal fuel tank.
- 37 Left-hand vertical fuel tank.
- 38 Oil cooler above clutch housing. Junction box above oil cooler.
- 39 Fire extinguisher, 4 lb. CO₂.

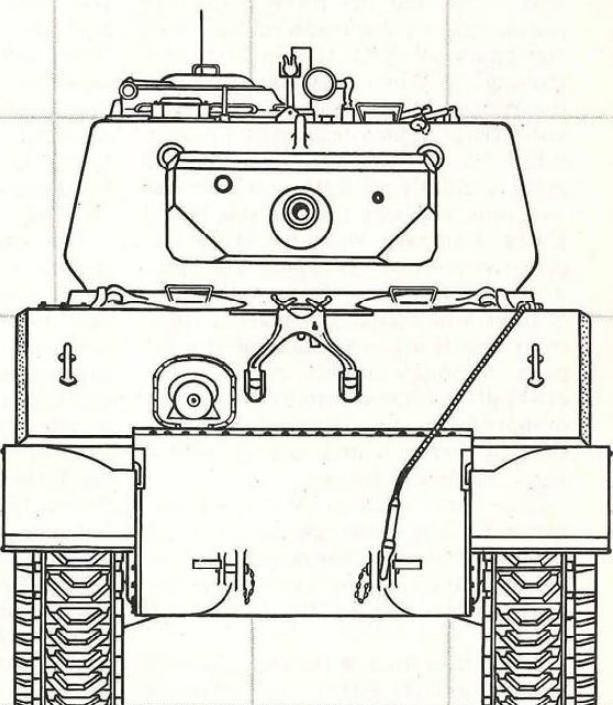
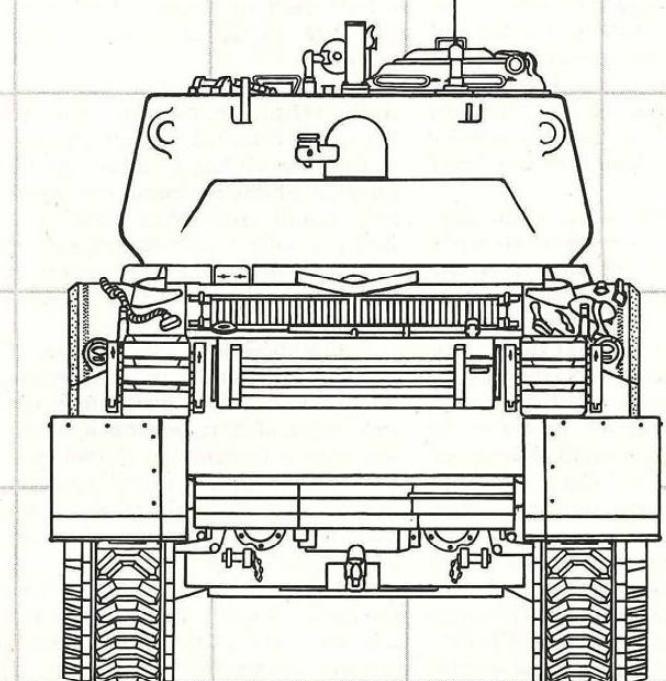


1/70 SCALE



M4A3E2 ASSAULT TANK

Length: 20' 7" **Armament:** One 75 mm M3 gun
Width: 9' 7½" or one 76 mm M1 gun, one .50
Height: 9' 8½" caliber M2 MG, two .30
Weight: 42 tons caliber M1919A4 MG, one 2" smoke mortar.
Crew: 5 22 mph
Engine: Ford GAA V-8 100 miles
Horsepower: 450 hp at 2,600 rpm Ground pressure: 14.2 lb/square inch
Fuel: Gasoline Number produced: 254





This Jumbo (4th Armored Division, 3rd Army, at Alzey, Germany, in March 1945) has been rearmed with the longer 76 mm gun and fitted with wire mesh for attaching foliage camouflage. The tank also has an extra .30 caliber machine gun in front of the commander's hatch, and the standard .50 caliber mg has been relocated to a new position in front of the loader's hatch.

four turret side pieces and two rear plates. Don't worry about micrometer accuracy; these are only rough parts to add bulk and general shape. The final contours will be achieved with body putty — and lots of filing and sanding.

Carefully bend two of the side plates with your fingers until they conform to the turret sides, then bond one to each side using liberal amounts of liquid cement. Do the same with one of the rear plates, then secure all three parts with several sturdy rubber bands. It's important that this subassembly dry completely before you continue.

Once the joints between the turret and the first layer of "extra armor" have dried, add the three remaining plates, securing them with rubber bands and again allowing the joints to dry thoroughly. When they have, remove the rubber bands and you'll have a fairly crude approximation of a Jumbo turret, Fig. 4. Using your favorite filler putty, carefully patch the nooks, crannies, and crevices around the added plates. Compare your turret to the plans frequently, and apply the putty in several thin coats; thick applications of filler will soften the plastic, especially the thinner sections of the kit parts. Although building up the shape gradually is time consuming, it's better to apply four or five (or more) thin coats than to overdo it and end up with a soggy, half-melted mess.

Once you've built up the shape to correspond to the drawings, use files and sandpaper to refine the contours. Here again, take your time and compare the turret frequently to the plans and photos.

Turret details and texture. Carve a shallow "gutter" around the perimeter of the turret roof as shown on the



Both photos, U. S. Army Signal Corps, Richard Hunnicutt collection
Ordnance personnel servicing a newly arrived M4A3E2 at Cherbourg, France, in November 1944. This tank carries the standard M3 75 mm gun. Note how the added hull plates do not reach to the corners of the hull, the beveled edges of the plates, and the thickness of the enormous special gun mantlet.

drawings. Mark the groove with a sharp pencil, then go over it with a fresh knife blade.

You have a couple of options for modeling the loader's hatch. While it could simply be scribed into the surface using a knife blade and the hinge and spring detail added afterward, I decided to use the hatch molded into the top of the Tamiya turret. I used a razor saw to cut a section out of the Tamiya turret slightly larger than the hatch, then carefully trimmed away everything but the hatch and hinge detail.

Now comes the tricky part. To make the hatch appear to be sunk into the turret roof instead of sitting on top of it, you must carefully cut a hole in the roof of the exact shape and size of the hatch and hinge. Study the plans and carefully mark the location of the hatch with a sharp pencil — use the commander's cupola as a reference point. Once you've cut the hole, cement the Tamiya hatch flush with the top of the roof.

The Jumbo turret was a rough casting, but the Italeri turret and the parts we've added to it are smooth, so we need to rough up the sides, top front, and rear surfaces to better represent the cast texture of the real thing. The roof was a separate, rolled armor plate, so start by masking it off at the gutter line. Texture the rest of the turret by carefully brushing on small amounts of Pactra Hot Fuel Proof Dope (from the flying model airplane section of your hobby shop).

The dope softens the surface of the plastic almost immediately, and you should practice on an old part before using the technique on the Jumbo turret. Once the dope begins to soften the plastic and putty, stipple the surface

with a stiff-bristled, metal-handled glue brush from a craft shop or hardware store. Cut the bristles off about half-way up to make them even stiffer.

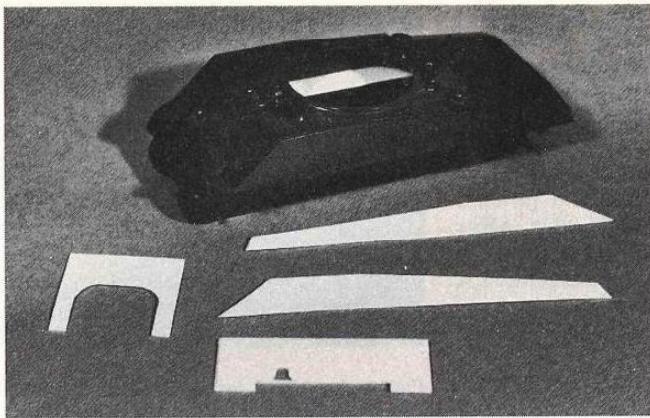
After stippling you should have a coarse texture that, when painted, will look remarkably like cast armor. When you are satisfied with the effect, set the turret aside and allow the dope to dry before handling it further. If you feel you've overdone it, sand the surface lightly to remove some of the roughness.

Drill a small hole in the left front roof to represent the opening for the 2" smoke mortar inside the Jumbo, and another near front center of the roof for the Tamiya searchlight. Make the half-dome ventilator on the turret rear from a part from your spares box; mine began life as the nose of an aircraft torpedo.

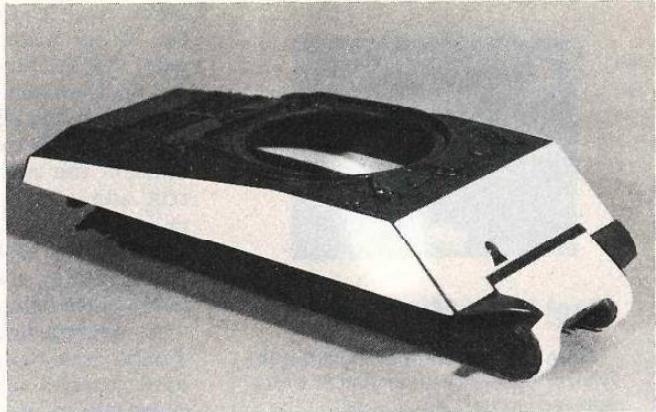
Add the machine gun pintle mount to the ventilator, machine gun rack to the turret rear, lift rings, sight in front of the loader's hatch (mine came from an old Nichimo Sherman kit), machine gun mount, and other turret details. Add a slender stretched-sprue antenna to the Tamiya antenna mount (part 83), and the Jumbo turret is complete, Fig. 5.

Scratchbuilding the mantlet. The rectangular Jumbo mantlet shape is fairly complex. I tried carving it from a solid block of styrene made by laminating several thicknesses of .080" plastic, but decided that a more realistic approach was to fabricate the mantlet from individual flat pieces similar to the original.

Use the templates, page 47, to make the parts. Cement the top to the back of the front and let dry. Test fit the side pieces to each other and the front plate and trim and bevel until the fit is right.



Figs. 6 and 7. (Left) The Tamiya hull and chassis and the add-on sheet styrene armor plates. All the raised detail on the hull front and sides has been filed off and the hull machine gun mount has



been cemented in place. (Right) The hull after adding the extra plates. Note that the front and side pieces do not reach all the way to the corners of the hull.

Cement the upper sides to the front and top, let dry, then add the lower sides. Finally, cement the bottom to the rest of the assembly.

I made the gun collar (the round part from which the barrel protrudes) from an old Aurora Stalin tank fuel drum, but just about anything $\frac{3}{8}$ " in diameter will do. Drill the collar to take the gun barrel (I used the 76 mm gun from the Italeri Sherman — it's longer, which makes the model more impressive), then cement it to the mantlet. Drill out the coaxial machine gun port (left) and the telescopic sight hole (right) in the front of the mantlet, then add a machine gun barrel to the left hole; it should stick out about $\frac{3}{16}$ ".

Finally, add the two lift rings to the mantlet. Photos of the Jumbos show these rings in at least three different positions, and they were not perpendicular to the surface, but angled back at about 45 degrees.

Make mantlet trunnions from sprue about $\frac{3}{16}$ " in diameter. File one side flat and cement the resulting D-shaped pieces on either side of the opening in the front of the turret. I simply cemented the completed mantlet to the trunnions; making it movable will require ingenuity on your part.

Hull and final-drive housing modifications. Start work on the hull by removing all protruding detail from the front hull plate and filing away the small raised ledge that runs along the bottom of the hull sides, Fig. 6. Install the hull machine gun ball (Tamiya part B4) now, because once the front hull plate is added you won't be able to position it through the tiny, keyhole-shaped aperture.

Using the templates cut one front and two side hull armor plates. Bevel the shaded edges about 45 degrees. Cement the plates to the hull and hold them in place with clamps and tape. Note that the added plates should not extend completely to the corners of the

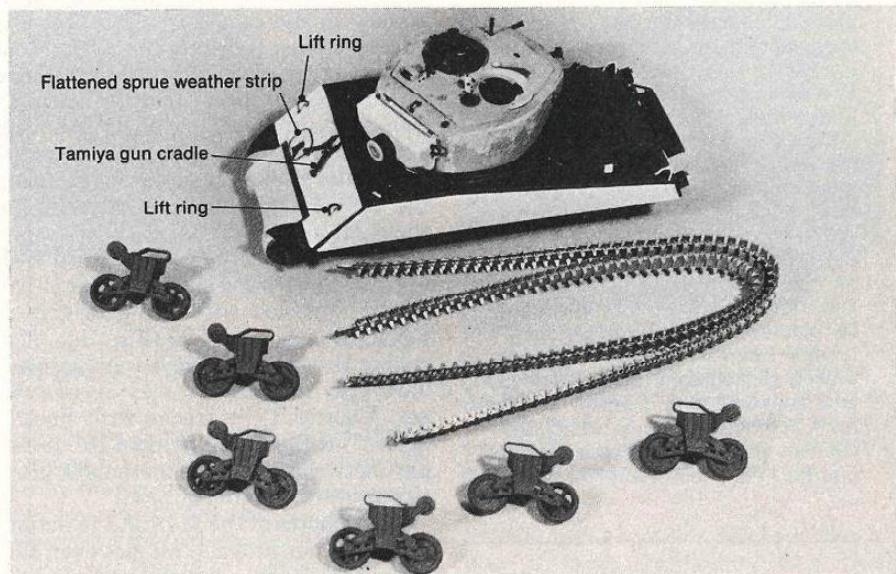


Fig. 8. The hull, turret, and suspension components ready for painting. Note the mixing of spoked and solid wheels on the suspension bogeys. The revised front plate on the Jumbo is relatively bare, which makes detailing it easy.

hull — there should be a slight gap.

Cut the final-drive housing armor piece and cement it to the Tamiya housing (part B26). When the cement has dried, fair the armor into the surrounding plastic with putty. Like the turret the final-drive housing was cast, but it didn't have as rough a surface, so there's no need for the dope-and-stippling technique.

Enlarge the Tamiya turret ring to accept the Italeri turret. If you're concerned about the turret falling off, devise some lugs and corresponding cut-outs in the ring. My turret is simply a press fit into the ring; with all the added styrene and putty, it's heavy enough to stay put without much help.

Cement the upper hull to the lower hull and rear plate, add the final-drive housing, Fig. 7, and assemble the Tamiya suspension. There is a problem here, even with the stock kit: The sus-

pension does not protrude far enough from the hull sides. This is especially noticeable on the Jumbo, due to its increased width. The flaw is easy to fix; simply cement a $\frac{1}{4}$ " x $\frac{1}{16}$ " rectangle of .020" plastic between each bogey unit and the hull side.

The Tamiya Sherman has the standard solid bogey wheels, and while these are appropriate for the Jumbo, photos show that it was common practice to mix the solid wheels with the older spoked variety, Fig. 8. When assembling bogey units I substituted a few spoked bogey wheels from the Italeri kit, enlarging the axle holes to fit the Tamiya axles.

The Jumbo had a relatively uncluttered front plate. There were no headlights or siren, just two lift rings, the gun cradle, and a protective weather strip around the hull machine gun aperture. Position the Tamiya lift rings



Meet Dave Musikoff

Dave lives in southern California, where he works as a technical writer and researcher. He majored in journalism at local colleges, and he claims to be one of the fastest one-finger typists in captivity. He's also been team manager for a professional Can-Am racing team, and a correspondent for three racing magazines at the same time! "It was a very exciting time in my life, but going two or three days without sleep or a decent meal can get a little old after a while," he confides.

Dave (shown here in the cockpit of the Spruce Goose) built his first model when he was eight and has been an avid modeler ever since, specializing in armor and aircraft, plus an occasional car or ship. He's an active member of IPMS/Canada and firmly believes that modeling should never be taken too seriously.

Other interests include hiking, bicycling, photography, purebred dogs, and beachcombing. He now shares his space with an elderly, aristocratic German shepherd, but expects to be married in the near future.

Cindy Chick

$\frac{5}{16}$ " in from the top edge of the hull plate and $\frac{1}{4}$ " from the sides.

The Jumbo gun cradle differed from the standard Sherman fitting only in a few minor ways, so I used the kit part rather than make a new one. The hinges and mounts were scrounged from my spare parts box. I made the weather strip around the hull machine gun aperture by bending a thin piece of stretched spruce to the proper shape and cementing it with liquid cement. After the cement had dried thoroughly, I carefully filed the sprue flat.

Final details. The rest of the Jumbo hull was almost identical to a standard M4A3. I carefully trimmed off the solid cast hatch handles and replaced them with new ones made from copper wire, and replaced the latches on the fuel and water caps on the engine deck with stretched sprue. I made guards for the periscopes on the hull hatches from copper wire; although difficult to make, these add a lot of realism.

The tow cable consists of the end fittings from the cable in the Italeri Sherman and a length of .027" model air-

plane steel lead-out wire, available in the flying model airplane section of your hobby shop. Cut the wire to length, then hold it with pliers or tongs over the flame of a gas stove burner or propane torch until it glows red. This anneals the metal, changing it from stiff and springy to soft and pliable, and imparts a subtle rust color. After the wire has cooled, drill a small hole in each Italeri end fitting and cement it to the cable using super glue.

A common field modification to the Jumbo was replacement of the standard turret-mounted antiaircraft machine gun mount with two mounts, one in front of each turret hatch. This increased close-in firepower to protect the tank from infantry antitank weapons such as the Panzerfaust, which were encountered with increasing frequency in the campaign. Usually, one mount carried the standard .50 caliber Browning while the other was used for a .30 caliber weapon. I built two mounts from sprue and spare parts, then added a .50 caliber (from the Italeri kit) to the left mount and a .30 caliber gun (from the Italeri Arms Pack assortment) to the right mount, Fig. 9.

Paint and markings. I airbrushed my Jumbo with Pactra Scale Flat Olive Drab, lightened with white to give a faded, weathered look, Fig. 10. The rubber tires on the bogeys were painted dark gray to represent weathered rubber. I sprayed the tracks with Pactra Scale Flat Steel and painted the inner part between the guide teeth dark gray to represent the rubber pads.

Most photos of the M4A3E2 in action reveal no markings at all, not even the usual Army serial numbers! I've seen only one action shot with a serial number (USA 3082929), and even the standard yellow bridge-classification discs seem to have been painted over or sanded off.

This lack of decoration may have been a result of the Jumbo's use as the lead tank in armored columns. Combat photos suggest that many Jumbos began life with the usual white, five-pointed Allied stars, but almost without exception these appear to have been painted out, probably using fresh O.D. paint — those big white stars made excellent aiming points for enemy gunners. I duplicated the look of these toned-down markings by roughly painting over the Microscale stars using O.D. paint darkened with black to duplicate the look of fresh paint over the faded original finish.

Tarps and nets. Photos of the European campaign show mountains of extra equipment tied on top of most of the tanks, as well as plenty of "liberated" material. Adding such stowed equipment is one of the aspects of armor modeling that I enjoy most.

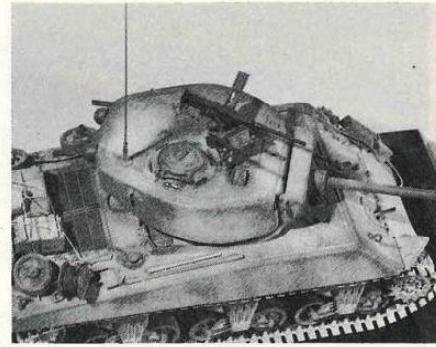


Fig. 9. As Allied forces moved closer to Germany, infantry antitank weapons such as the Panzerfaust rocket became more and more of a threat. Many Jumbos mounted an extra .30 caliber machine gun for close-in defense.

I make rolled tarps out of tissue paper, the kind that comes inside gift boxes (sometimes called French tissue). To start, cut a piece approximately to size, then carefully crumple it into a little ball, unfold it, and wad it up again. This takes the stiffness out of the tissue and makes it look more like cloth. Next fold and roll the tarp and tie it in place using thread. To duplicate webbed canvas straps use thin strips of 3M Micro-Pore surgical tape (available at a pharmacy).

Make rolled camouflage nets from fine surgical gauze, folding the edges in so the ragged threads don't show. Roll the gauze to the desired size, tie with thread, then cover the thread with surgical-tape straps. I paint both tarps and nets with watercolors because enamels make them look stiff and artificial.

Nothing on a pitching, rolling, vibrating tank stays for long unless it is secured to the vehicle, so plan your stowage carefully and logically (make sure nothing is positioned where it would restrict the guns or the movement of the turret), and don't forget to tie every piece of equipment to your tank in some way, Fig. 11.

Weathering with watercolor — and ashes. Start weathering by giving the model an overall wash of thin, black watercolor. I use German Pelikan-brand watercolors, but any quality brand will do. Watercolors are easy to use: If you think the effect is exaggerated, simply wash some of it off using a wet cloth or a cotton swab. The "secrets" to making watercolor stick to plastic are to always apply them over a dead-flat finish (no matter what you do, they won't adhere to a gloss finish), and to add a couple of drops of liquid detergent to the water.

Once the black wash has dried, give the tank a thicker wash of dark brown, concentrating the heaviest doses on the lower hull and suspension. Next, add a light rust-colored wash to the metal

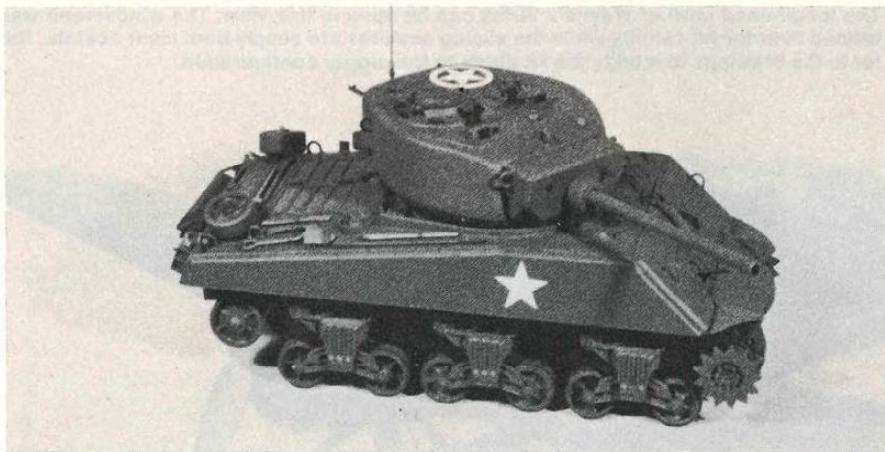


Fig. 10. The Jumbo after painting and decaling. Dave later painted over the white stars to duplicate the painted-out insignia seen in action photos of the M4A3E2.

portions of the tracks. (A caution: Unless you're modeling your Jumbo as a rotting derelict, go light on the rust!) When you're satisfied with the weathering (don't forget the insides of the wheels!), let it dry, then spray on a thin coat of clear flat finish and allow it to dry thoroughly.

I completed my Jumbo with a light coating of sifted barbecue ashes. Strain the ashes from the bottom of your barbecue through an old flour sifter until you have a fine powder, then brush the ashes on the model using a large, soft brush, applying ash most heavily to the lower portions of the

hull, the suspension, and rear. Lay the ashes on thick, then blow the excess off. It may take more than one application, but the results are realistic (and the ashes are a lot less expensive than pastel chalk!). Follow the ashes with a final light dusting of clear flat with the airbrush held a couple of feet away from the model so the spray doesn't dislodge too much ash.

I'm pleased with my Jumbo, and enjoyed the project throughout. I hope you will, too.

FSM

REFERENCES

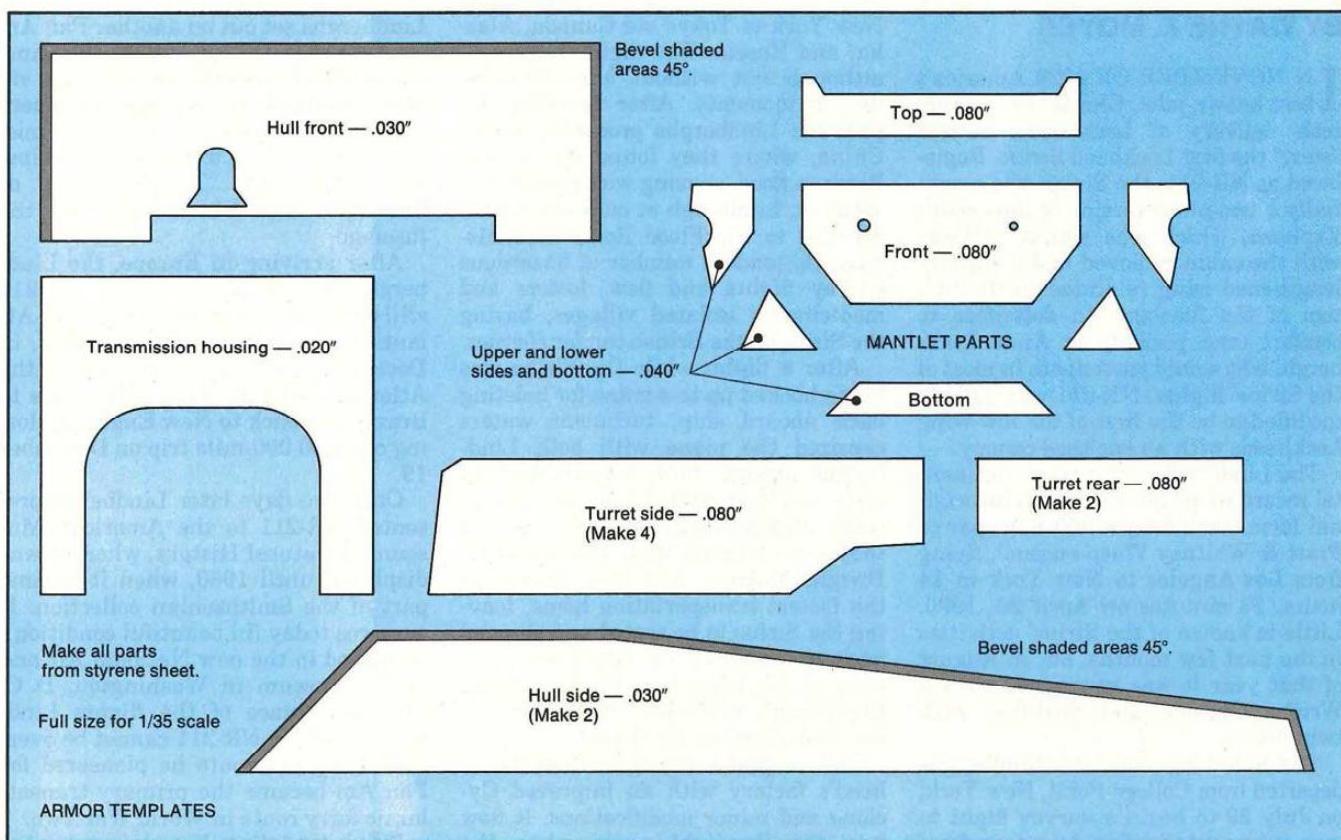
- Chamberlain, Peter, and Chris Ellis,

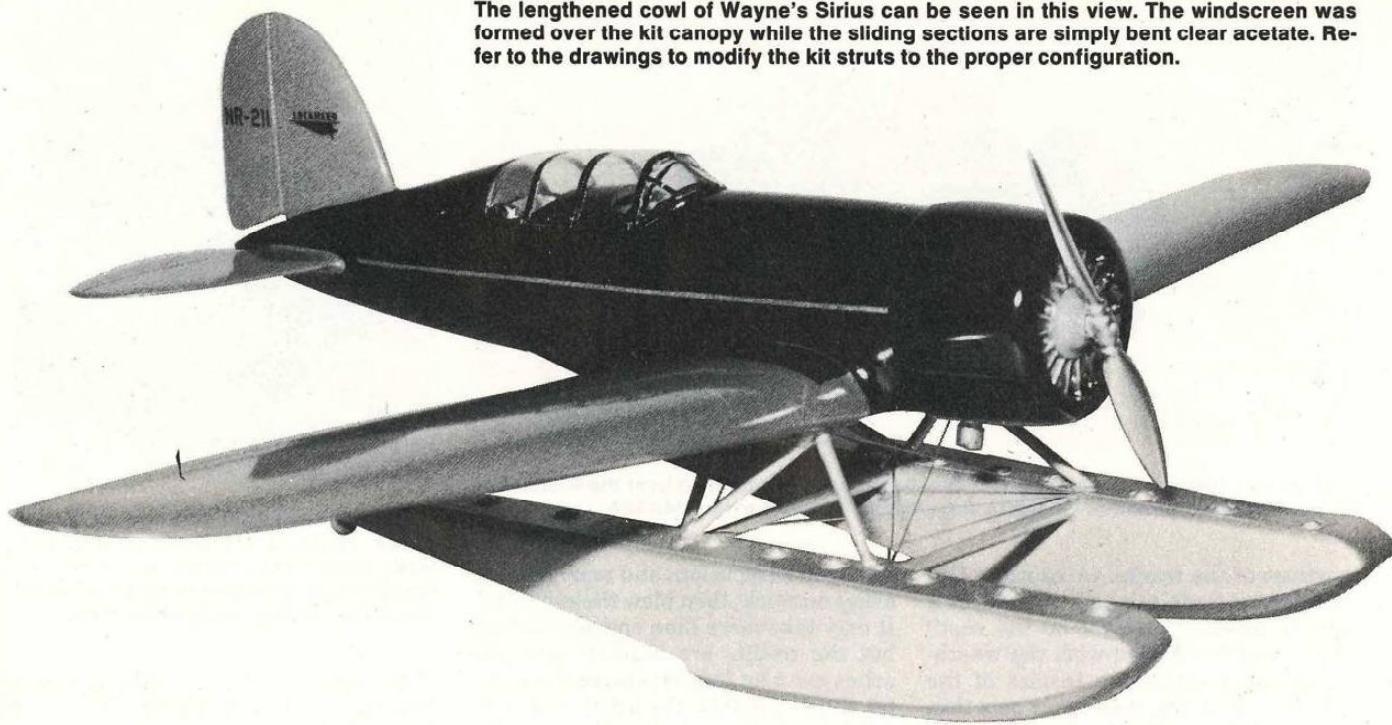


Fig. 11. The external stowage on Dave's Jumbo is about the minimum for U.S. tanks in the E.T.O. near the end of the war. Everything is arranged so that it wouldn't impair the fighting ability of the tank.

British and American Tanks of World War II, Arco Publishing Co., New York, 1975.

- Culver, Bruce, *Sherman in Action*, Squadron/Signal Publications, Carrollton, Texas, 1977.
- Hunnicutt, R. P., *Sherman: A History of the American Medium Tank*, Presidio Press, Novato, California, 1978.
- *M4 Sherman, U.S. Medium Tank of World War II*, Bunrin-do Co. Ltd., Tokyo, Japan, 1971.





The lengthened cowl of Wayne's Sirius can be seen in this view. The windscreens were formed over the kit canopy while the sliding sections are simply bent clear acetate. Refer to the drawings to modify the kit struts to the proper configuration.

Modeling Lindbergh's Lockheed

A "Sirius" conversion of AMT's 1/48 scale Vega

BY WAYNE E. MOYER

IN NOVEMBER OF 1929 America's best known pilot, Charles Lindbergh, took delivery of Lockheed's newest "star," the first Lockheed Sirius. Registered as NR-211, the Sirius was essentially a two-place version of the earlier Explorer, which was simply a Vega with the cabin removed and a slightly lengthened wing relocated to the bottom of the fuselage. In deference to comfort (and possibly to Anne Lindbergh, who would participate in most of the Sirius' flights) NR-211 was quickly modified to be the first of the low-wing Lockheeds with an enclosed canopy.

The Lindberghs set a transcontinental record with this aircraft in its original form (including a 450 horsepower Pratt & Whitney Wasp engine), flying from Los Angeles to New York in 14 hours, 23 minutes on April 20, 1930. Little is known of the Sirius' activities in the next few months, but in August of that year it was re-engined with a Wright Cyclone and modified with twin floats.

The following year, the Lindberghs departed from College Point, New York, on July 29 to begin a survey flight to map out a route for Pan American from

New York to Tokyo via Canada, Alaska, and Russia. The flight went well, although not without adrenalin-producing moments. After reaching Japan, the Lindberghs proceeded across China, where they found the Yellow River in flood, causing widespread devastation. Lindbergh at once offered his services to the Flood Relief Commission. He made a number of hazardous survey flights and flew doctors and medicine to isolated villages, basing the Sirius on the British carrier *Hermes*.

After a flight, while the Sirius was being hooked up to a crane for hoisting back aboard ship, turbulent waters capsized the plane with both Lindberghs aboard. Both leaped into the river and were pulled from the muddy water. Before NR-211 could be repaired they were notified that Anne's father, Dwight Morrow, had died; they took the fastest transportation home, leaving the Sirius to be crated and shipped back to Lockheed for rebuilding. The story of this flight is well told in Anne Lindbergh's published diaries and in her book *North to the Orient*.

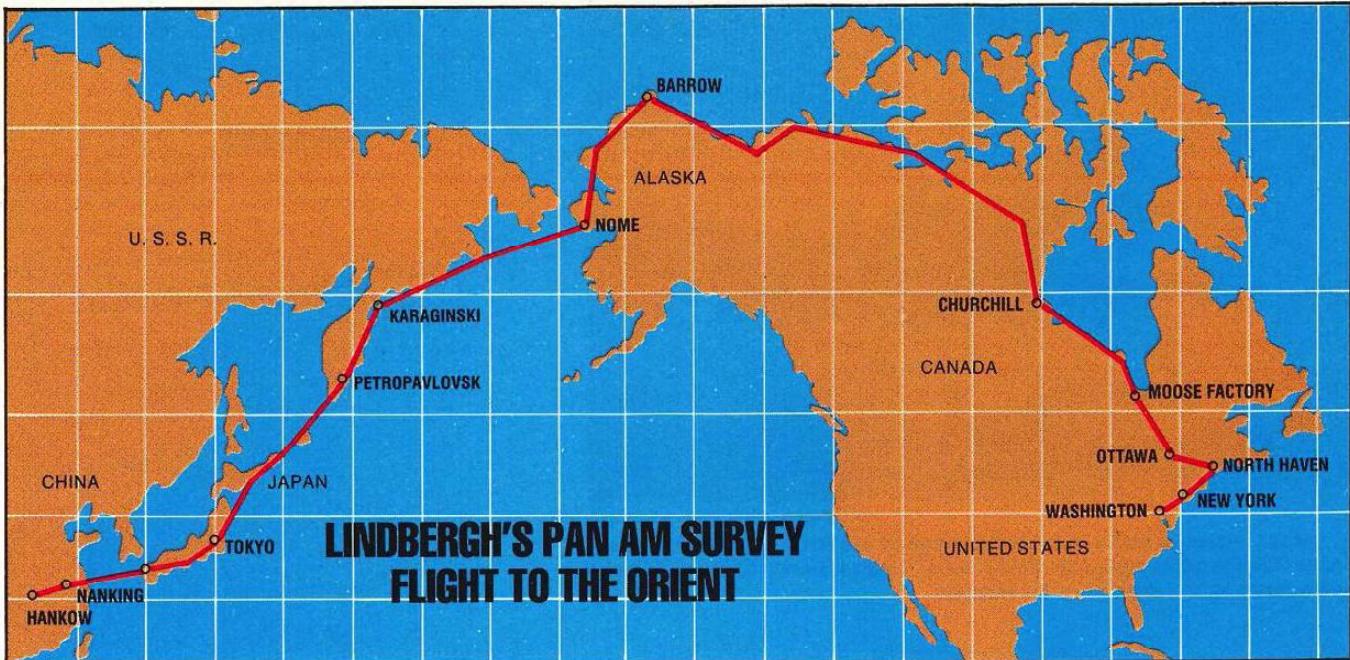
The airplane emerged from Lockheed's factory with an improved Cyclone and minor modifications. It flew into the limelight again when the

Lindberghs set out on another Pan Am route survey in July 1933, this time across the North Atlantic to Europe via Newfoundland, Greenland, the Faeroe islands, and Denmark. For this mission, NR-211 had a name; an Eskimo boy had painted "Tingmissartoq" or "one who flies like a bird" on the fuselage.

After arriving in Europe, the Lindberghs toured Russia (with NR-211 still on floats), then surveyed a mid-Atlantic route to the Azores. Finally, in December 1933, they again crossed the Atlantic, this time from East Africa to Brazil, and back to New England, closing out a 30,000-mile trip on December 19.

Only two days later Lindbergh presented NR-211 to the American Museum of Natural History, where it was displayed until 1960, when it became part of the Smithsonian collection. It survives today (in beautiful condition), displayed in the new National Air and Space Museum in Washington, D. C. The importance of the flights Lindbergh made in NR-211 cannot be overstated, for the route he pioneered for Pan Am became the primary transatlantic ferry route in World War Two.

Sirius modeling. I've always wanted



to build either an Explorer or a Sirius, and this ambition was whetted by seeing NR-211 at NASM in May of 1977. When AMT reissued its Vega with floats (kit No. T637), it provided all the pieces necessary to build Lindbergh's Lockheed. As with any conversion, good references are necessary, and the best for this conversion is the IPMS/U. S. A. *Quarterly*, Vol. 3, No. 3, 1968. That issue was devoted entirely to the single-engine Lockheeds, and contained 1/48 scale drawings and step-by-step conversion tips for each variant, using the old Lindberg Vega kit. Also helpful are the 1/48 scale Wylam plans in the February 1956 issue of *Model Airplane News*.

I began by gluing the windows in the fuselage halves, then applied putty over the windows and door outlines, Fig. 1. I taped the fuselage together and used a razor saw to cut away the Vega wing root area from the fuselage halves, then cut cockpit openings using the drawings to establish their locations, Fig. 2. I dry-fit cardboard templates for the forward fuselage bulkheads until I got the proper shape, then I made sheet styrene bulkheads and glued them into the fuselage. Sheet styrene was also used to make the cockpit floor. When the bulkheads and floor were dry, I painted the interior with Humbrol's Natural Wood (MC24) and allowed it to dry, Fig. 3.

I used my bulkhead patterns to make instrument panels for both cockpits, Fig. 4. The seats were made from thin sheet styrene and painted flat aluminum with masking tape seat belts. I made the control sticks from stretched sprue, and added rudder pedals and throttle quadrants from sprue and sheet



"Tingmissartoq" as it appears today, on display in the National Air and Space Museum, Washington, D. C. Note the glossy black fuselage and orange wings.



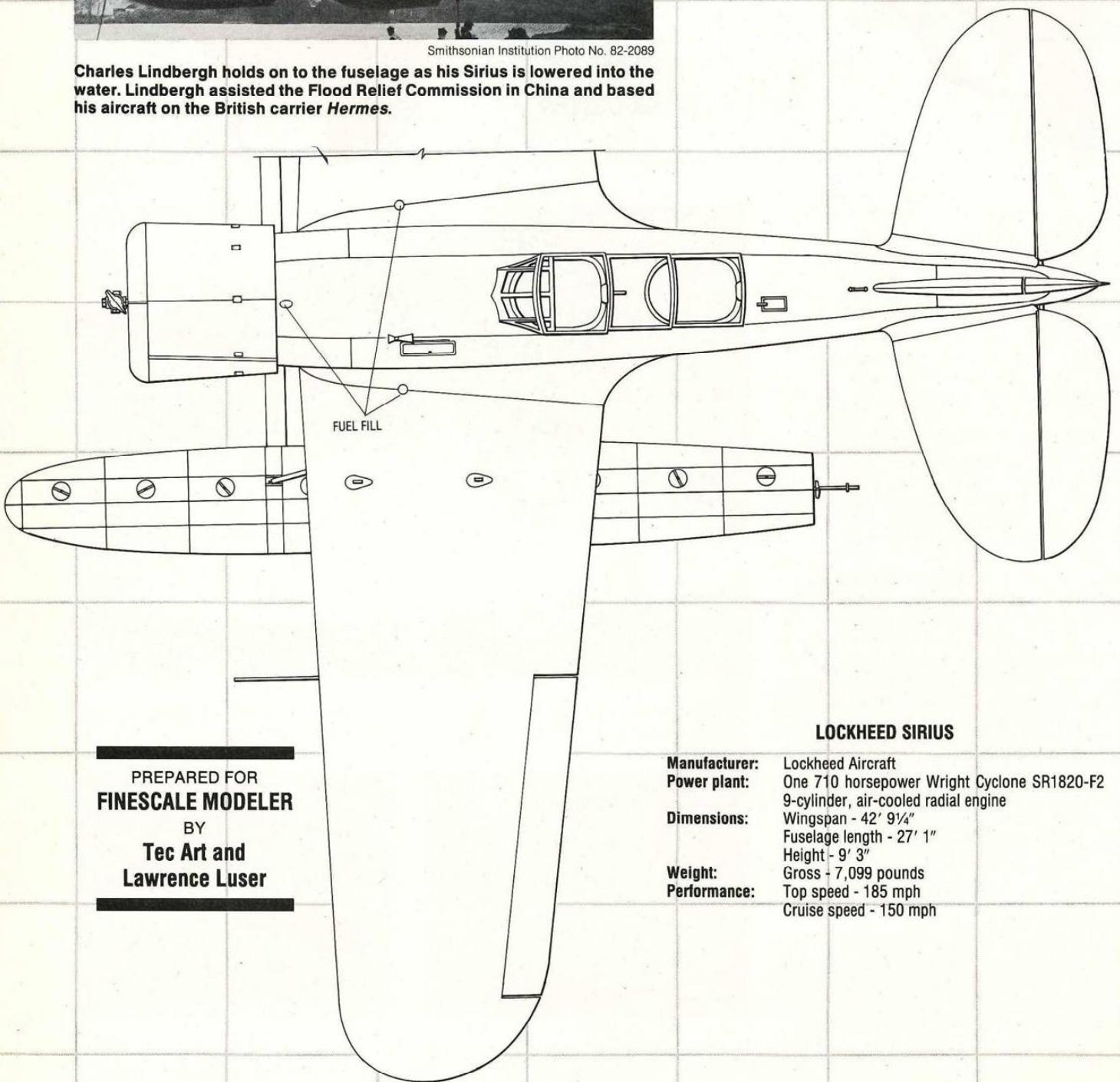
Wayne's model of Lindbergh's Lockheed Sirius was converted from the AMT Vega kit. Although there is little similarity, the Sirius used the same basic fuselage and wing structure of the earlier, high-wing Vega.



1/48 SCALE

Smithsonian Institution Photo No. 82-2089

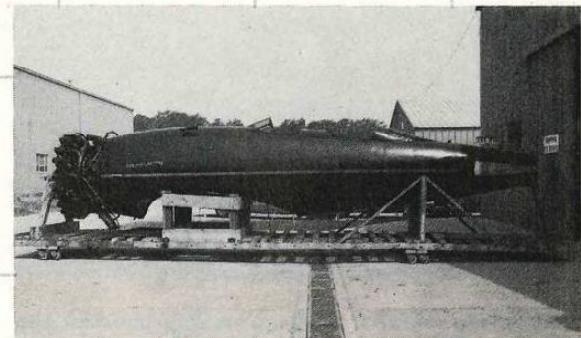
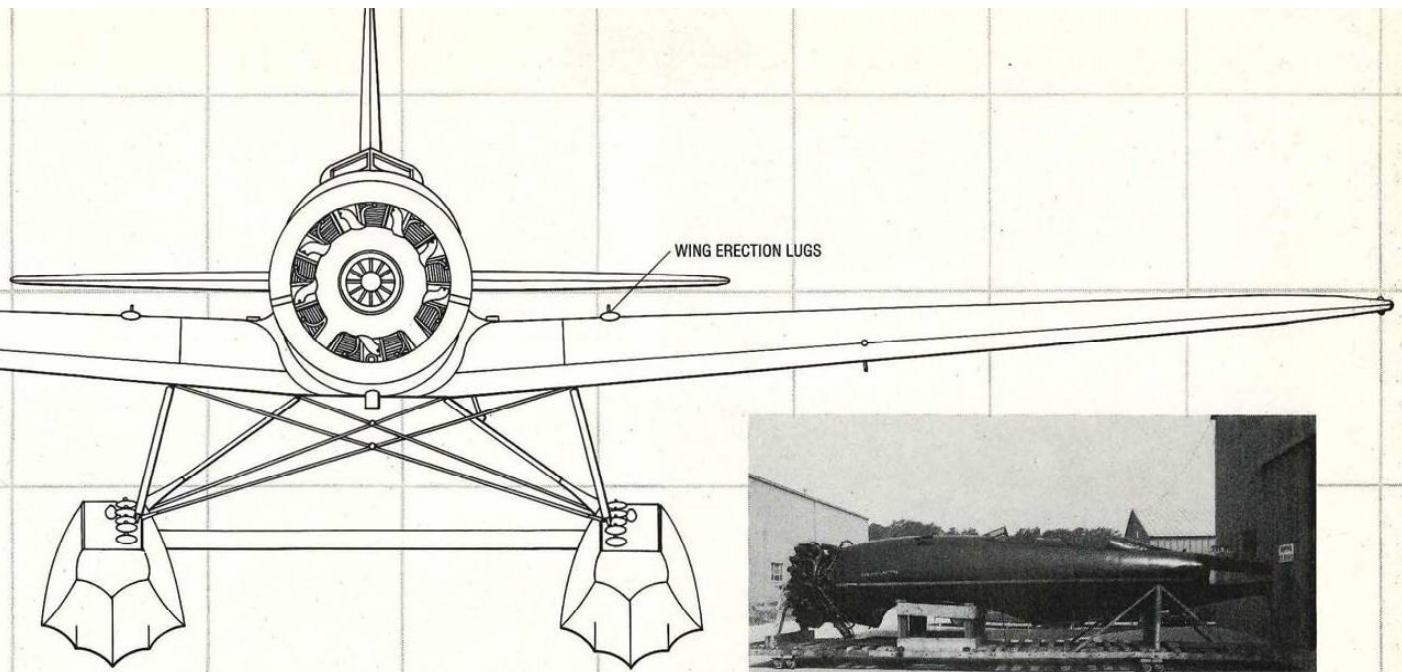
Charles Lindbergh holds on to the fuselage as his Sirius is lowered into the water. Lindbergh assisted the Flood Relief Commission in China and based his aircraft on the British carrier *Hermes*.



LOCKHEED SIRIUS

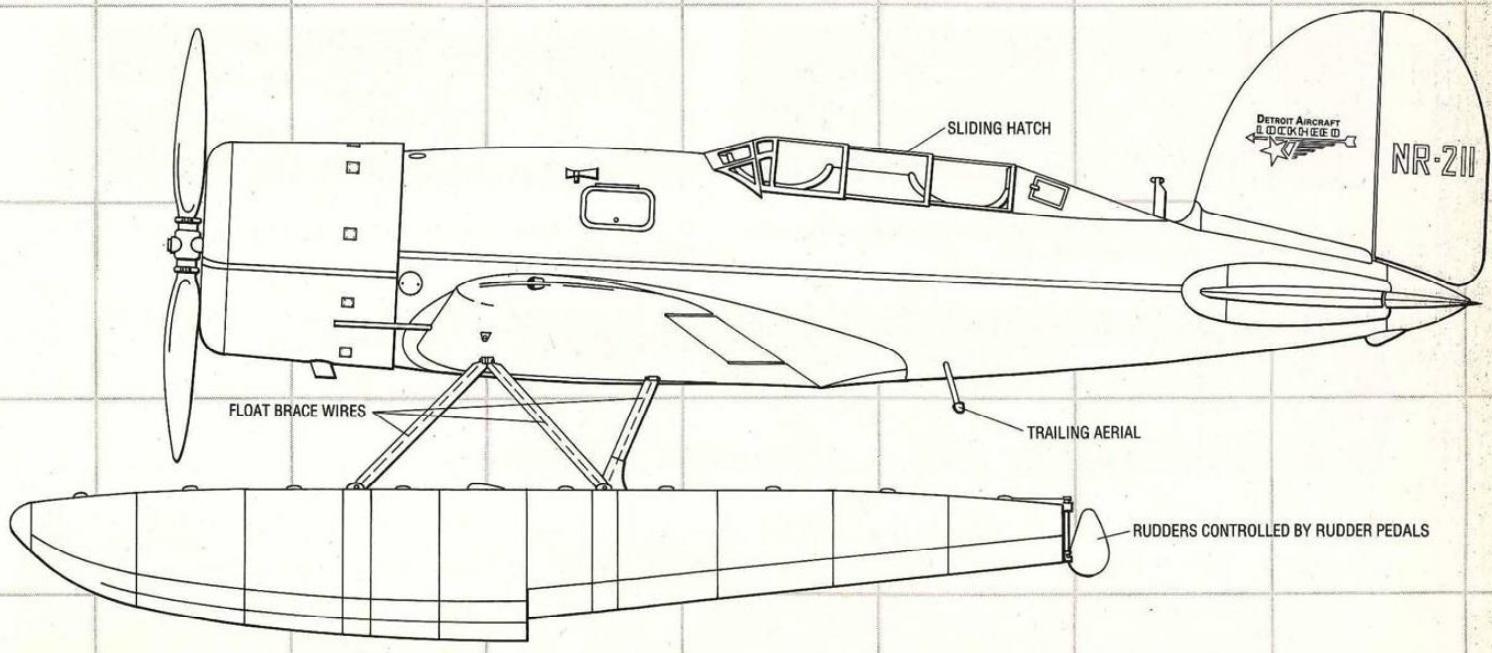
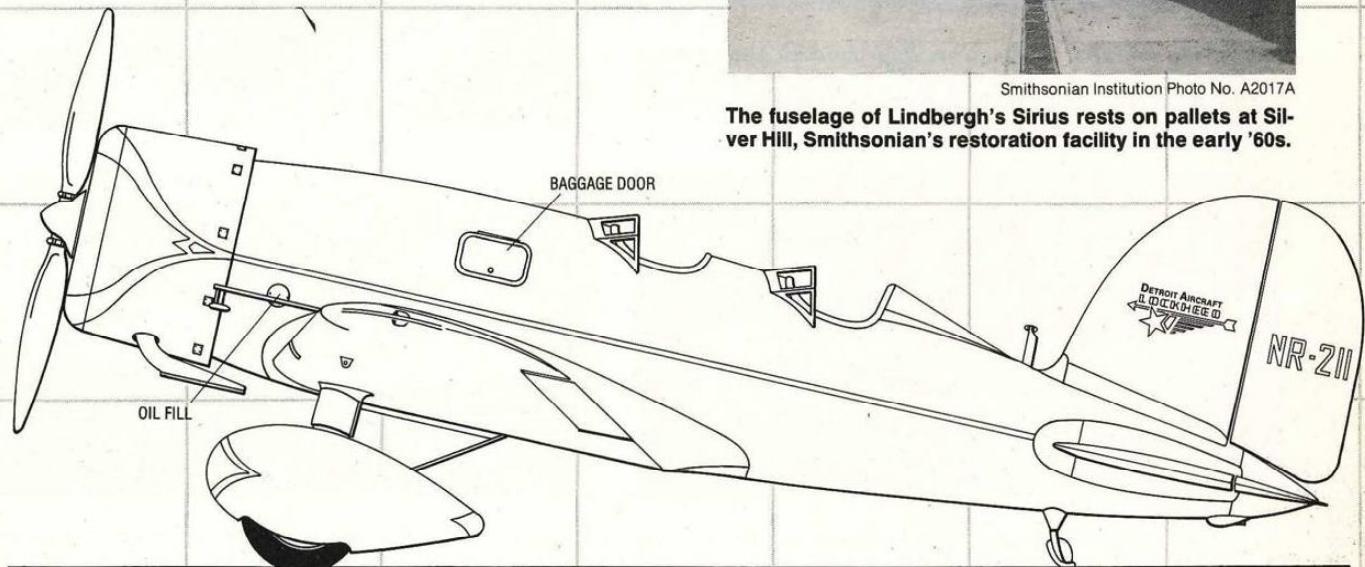
Manufacturer: Lockheed Aircraft
Power plant: One 710 horsepower Wright Cyclone SR1820-F2 9-cylinder, air-cooled radial engine
Dimensions: Wingspan - 42' 9 1/4" Fuselage length - 27' 1" Height - 9' 3"
Weight: Gross - 7,099 pounds
Performance: Top speed - 185 mph Cruise speed - 150 mph

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The fuselage of Lindbergh's Sirius rests on pallets at Silver Hill, Smithsonian's restoration facility in the early '60s.



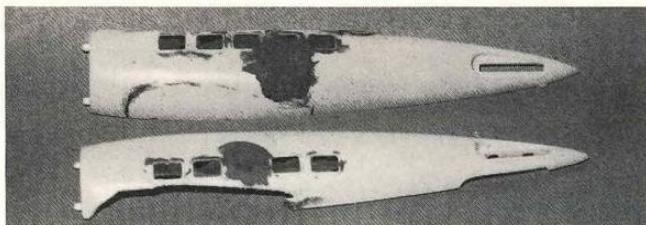
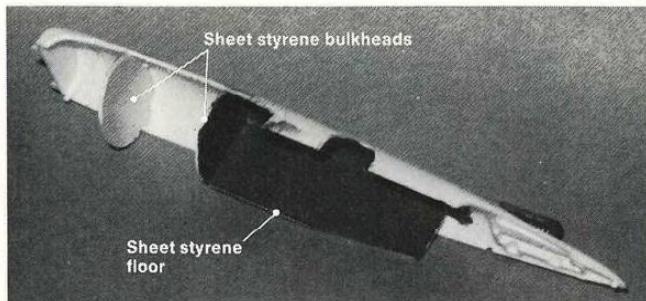


Fig. 1. The Vega windows were glued in place and covered with putty. Note putty over door outline.



Fig. 2. The fuselage halves were taped together, the kit wing root removed, and the rear cockpit opening cut out.



(Above) Fig. 3. Wayne made the fuselage bulkheads and cockpit floor from sheet styrene. (Right) Fig. 4. Instrument panels, seats, throttle quadrants, and pedals were made from sheet styrene. The rear cockpit opening is already cut out.

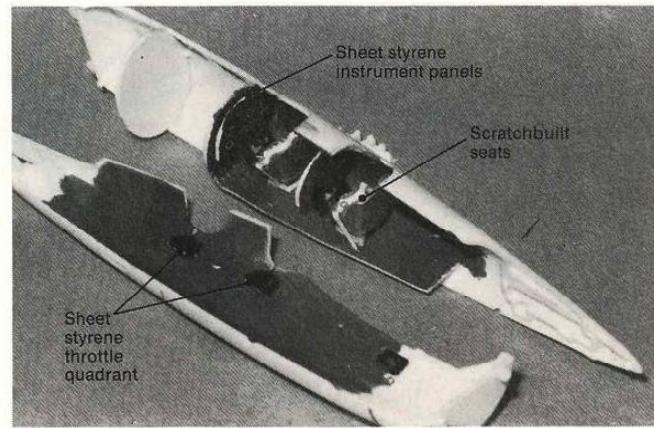


Fig. 5. The fuselage halves were glued together and the old wing root planked over with strips of styrene.

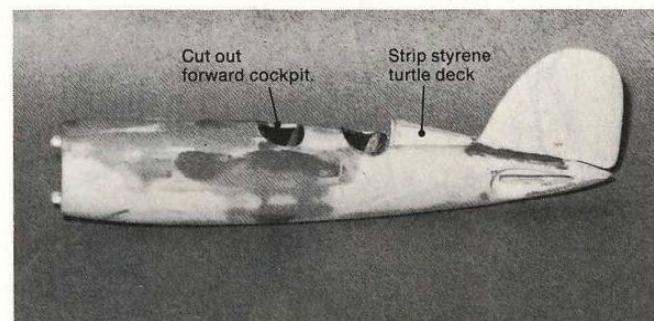


Fig. 6. The forward section was sanded smooth and the forward cockpit opening cut out. Turtle deck was built from styrene strips.

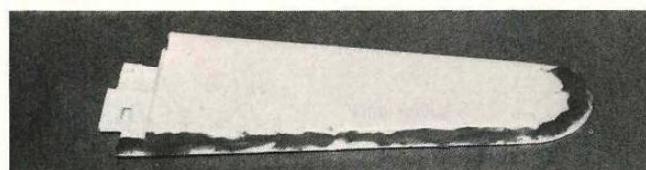


Fig. 7. Each wing half was assembled separately, then the seams were filled and sanded smooth.

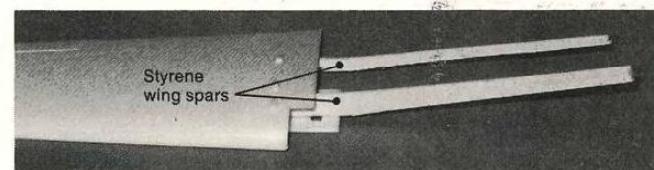


Fig. 8. Wing spars made from sheet styrene were glued into the right wing and left to dry.

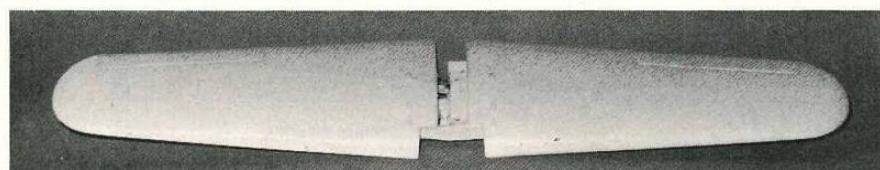


Fig. 9. The assembled wing. Check span with plans before the glue sets.

styrene. The Wylam plans were invaluable for locating the instruments, seats, and controls.

I carefully marked the wing location on one fuselage half before the fuselage

was assembled. After the interior was dry, I glued the fuselage halves together. When this joint was dry, I placed sheet styrene planks over the original wing root opening, Fig. 5. To

provide additional strength, I made a filler from sheet styrene shavings dissolved in Plastic Weld.* This was applied to the planked area instead of putty since it literally welds the entire structure together. Be sure to let this filler dry at least a week before filing

*Plastruct, 1161 Monterey Pass Road, Monterey Park, CA 91754.

and sanding. Next, I added the vertical tail and put the fuselage aside.

The forward fuselage was filed, sanded, filled, and sanded until I obtained the correct, smooth contours. I finished the forward cockpit opening and added a bulkhead and planking for the turtle deck behind the rear cockpit opening, and filed and sanded it to shape, Fig. 6.

Assembling the wing. I made front and rear wing spars using the front view of the drawings, then modified them to allow for the thickness of the upper and lower wing halves. I glued the wing halves together first, Fig. 7, puttied the seams on the underside of the wing, and sanded them smooth. Then I inserted the spars and bonded them with tube glue for extra strength, Fig. 8. The Sirius had a longer wing than the Vega; 42' 9 1/4" instead of 41'. To increase the span, I spaced the wings 7/16" apart on the spars, Fig. 9. Then I blocked the wing while it dried to ensure proper dihedral and lack of twist, and let it dry for a couple of days.

Meanwhile... With the fuselage and wings set aside to dry, I assembled the floats and horizontal tails, filling and sanding as necessary. Although the floats of Lindbergh's Sirius were not exactly the same as those included in the AMT Vega kit, I didn't think the minor differences were worth the extra conversion work. I sprayed the floats and float struts with Pactra Flat Aluminum, then gave them a light coat of clear gloss.

The cowling of the Sirius was slightly longer than the Vega cowl and extended back almost to the leading edge of the wing. I lengthened the kit cowl approximately 1/16" by cutting that much off a second Vega cowl. The four pieces were glued together and allowed to dry. Even though the cowl was longer, the fuselage of Lindbergh's Sirius was 5" shorter than the Vega. This difference was taken care of when I used a Dremel Tool to remove the flat mounting brackets inside the cowl and to thin the rear edges of the cowling to get it to slide back further on the fuselage.

I scavenged an R-1820 Cyclone engine and controllable pitch prop from an old Lindberg Curtiss F11C-2 kit (No. 460). I painted the engine and sprayed the interior of the cowl flat aluminum. After the exterior was sanded smooth, I placed the engine inside the cowl, modifying it so I could mount the prop after the model was completed.

Relocating the wing. Next, I cut out the wing opening in the fuselage with a razor saw and a knife, Fig. 10. The wing was glued into place with tube glue and allowed to dry for several days. I used scrap sheet styrene from vacuum-formed kits to fill gaps on the

IN OHIO...

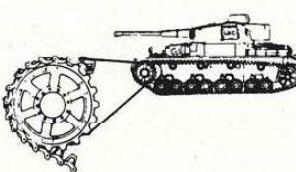
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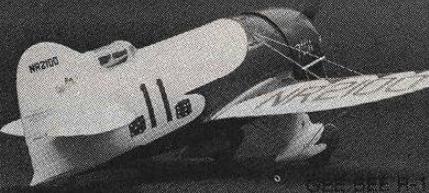
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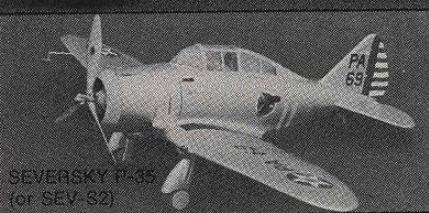
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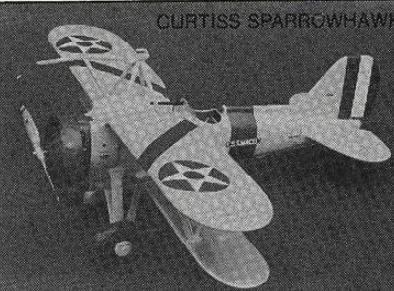
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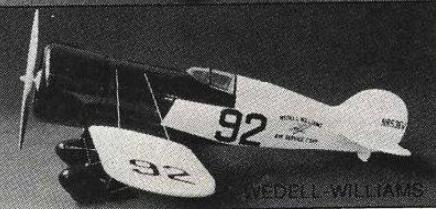


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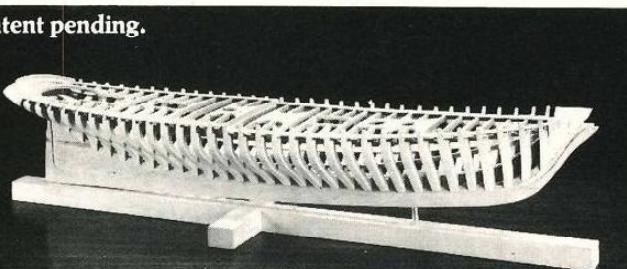
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Fig. 10. The wing root area was cut out with a knife and shaped with a file, dry-fitting occasionally.

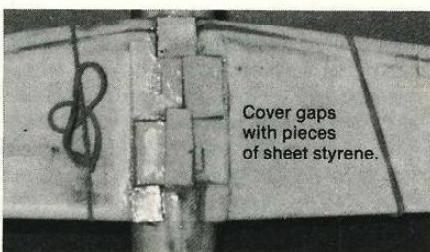


Fig. 11. After all fuselage work is done, glue the wing in place. Fill the lower surface gaps with sheet styrene and build up wing fillets with putty.

bottom of the wing and around the leading edge, Fig. 11, then faired the plastic in with Squadron Green Putty.* The large wing fillet was built up with several layers of putty, and while waiting for it to dry, I added the horizontal tails and filled the seams.

Painting. After all the seams, fillets, and fairings were sanded smooth, I attached the cowling and washed the model. Next, I primed the model and filled minor blemishes, then sanded them smooth and applied a second coat of primer. I sprayed gold stripes down the fuselage sides and masked them. The wings and tail were sprayed a red-orange to match my photos of the real airplane taken at the Smithsonian. I masked the wings, tail, cockpits, and engine with tissue and sprayed the fuselage gloss black and once again set the model aside to dry for several days.

After the paint had dried, I added the canopy. The kit canopy was used to make the forward windscreens, while the fixed center section and sliding hatches were made from clear sheet plastic. I added decals and attached the floats. I used stretched sprue for the float braces. The aircraft name "Ting-missartoq" was hand painted on the forward fuselage and the prop added to finish off the model.

The finished model is a pleasing replica of an aircraft that will probably never be kitted. The Lockheed Sirius deserves a better fate; after all, Lindbergh flew it much longer and much farther than his famous Ryan "Spirit of St. Louis."

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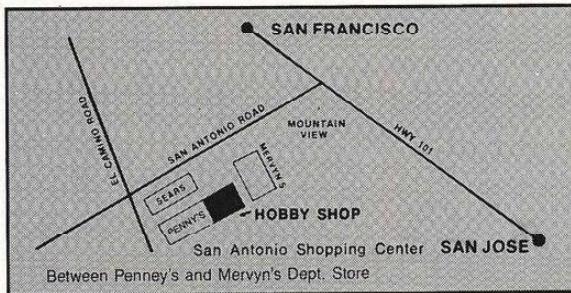
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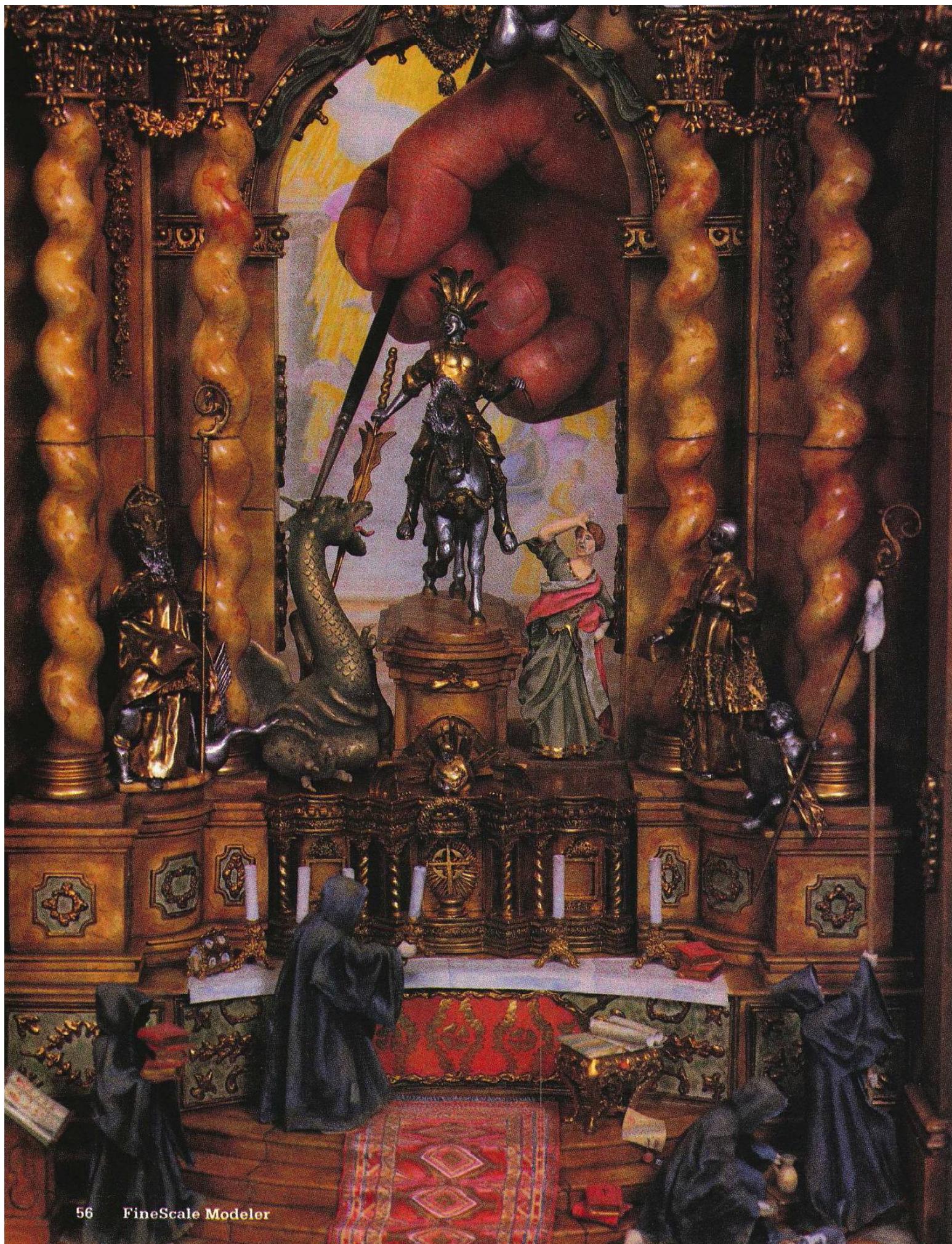


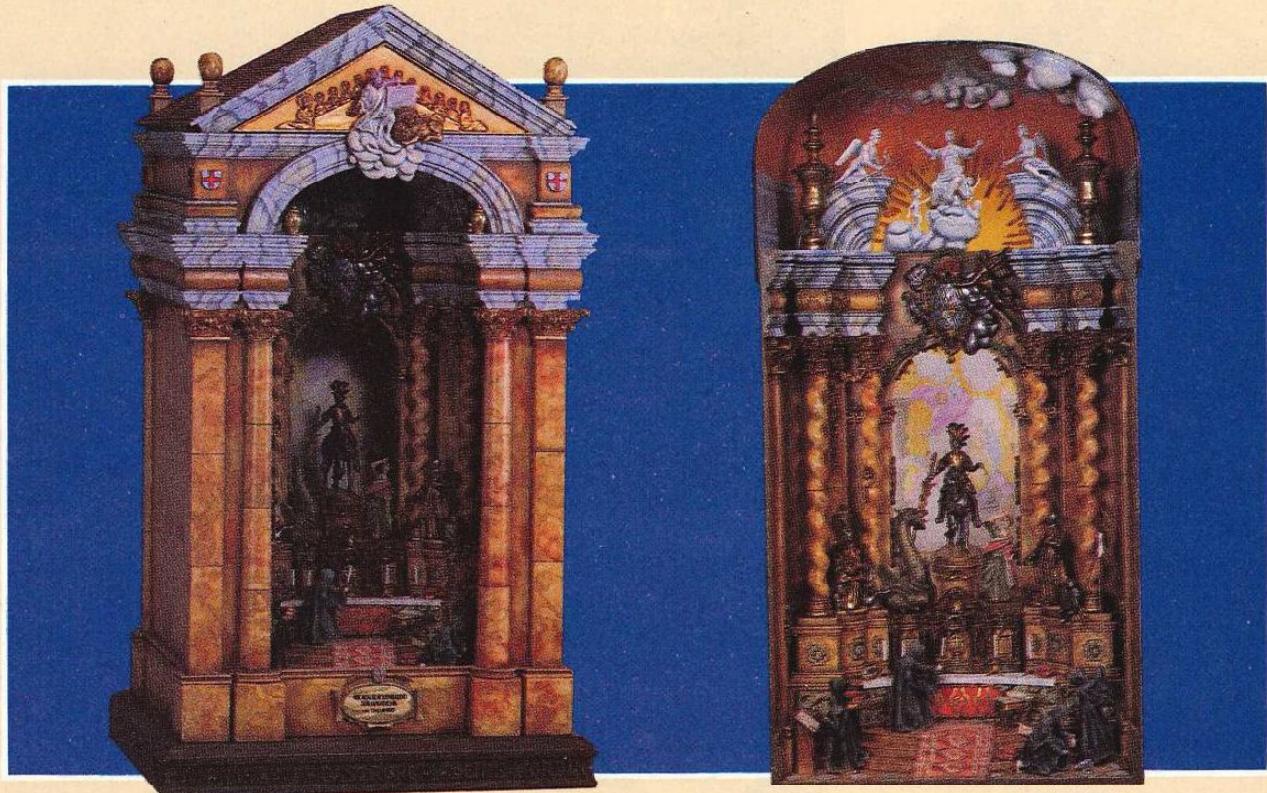
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FSM SHOWCASE SPECIAL FEATURE

The high altar of the Benedictine Abbey, Weltenburg, Germany

Ray Anderson's stunning 1/25 scale diorama

RAY ANDERSON of Manhattan Beach, California, told FSM that he wanted to create something extraordinary for his 100th diorama. "My selection was the high altar of the Benedictine Abbey circa 1720 in Weltenburg, Germany, on the Danube," he said. "There wasn't even a close second choice."

While we usually don't publish in-progress photos of models featured in FSM Showcase, we were so impressed by Ray's work that you'll find four such photos of his Benedictine Abbey diorama on page 58.

For this project, Ray said he knew he would use most of the techniques he learned while building previous dioramas. "The natural lighting in the Abbey is dramatic and ideal for a boxed diorama," Ray explained. "I prefer open scenes such as this that can also be enjoyed from a distance. Bringing the details up to the front glass makes the viewer feel a part of the scene. This was accomplished by using the efficient miniature fluorescent lights to overpower the room lighting."

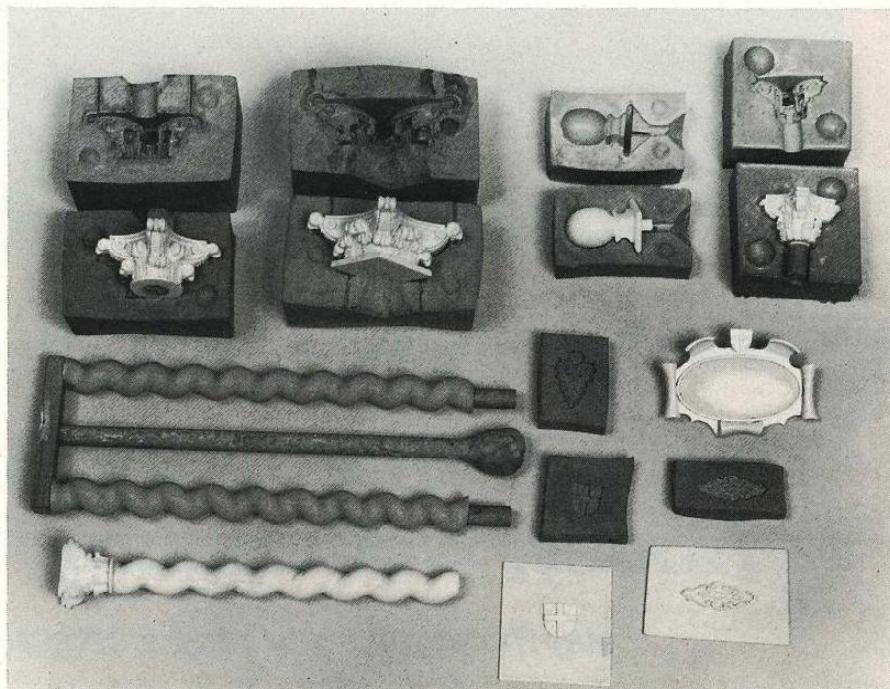
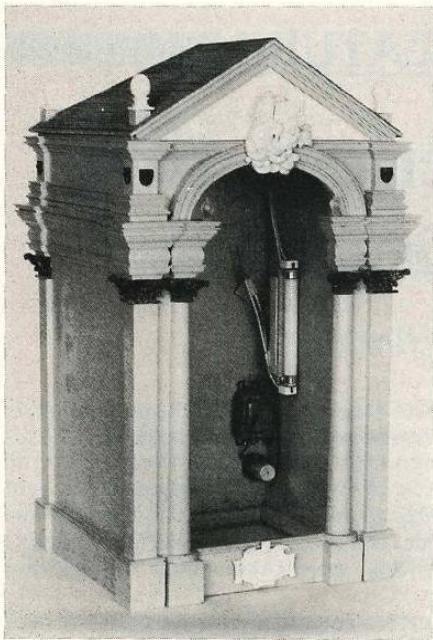
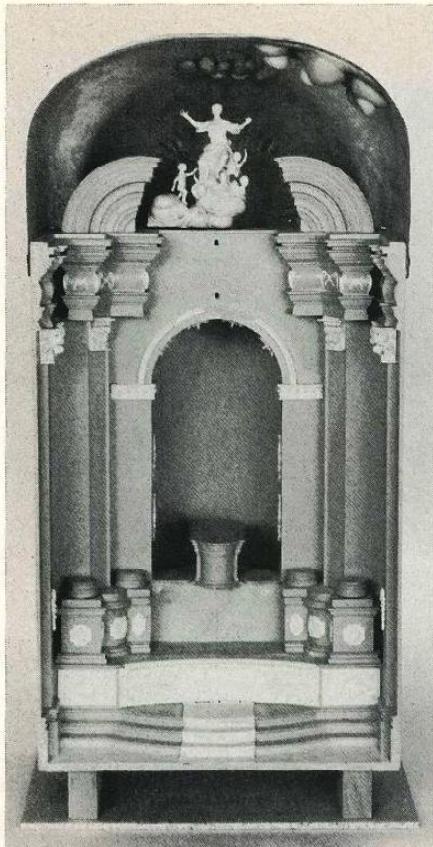
(Left) Ray created this striking scene of the high altar of the Benedictine Abbey in Weltenburg for his 100th diorama.

"I prefer to keep the outer case as small as possible, so many of the clearances between the scene and the case are less than $\frac{1}{8}$ ". In designing the outer case, the gray marble molding from the interior was carried around to the exterior. The front face was copied from the main arch separating the high altar from the body of the church. The peaked roof and shingle concept were taken from the building exterior."

"The design was further complicated since I did not want any exposed joints. The design had to be worked out in greater detail than usual, as there was little room for error with the minimum clearances. The inner box assembly is installed from below. Incidentally, I always use metric measurements as they simplify the design and construction. All of the components were scratchbuilt and to the proper scale based on the drawings and photos received from the Abbey."

The base of the diorama is about 12 inches square. The figures are Historex conversions — enlarged to about 60 mm — using the typical shim-and-wedge technique. Ray made the clothing from Kleenex coated with dissolved plastic.

According to Ray, "The dragon and clouds were sculpted



The interior scene with its vaulted ceiling (top left) slides into the furniture-like outer case (left) from below. It's a tight fit. (Top right) The figures are conversions of Historex 54 mm military figures, enlarged to about 60 mm tall. Ray made the clothing from Kleenex coated with dissolved plastic. (Above) Many of the ornate, repetitive details were cast in epoxy using RTV molds. Most of the patterns are styrene.

from A + B epoxy putty. The dragon was coated with dissolved polystyrene so that fine details such as claws and teeth could be made from sheet plastic.

"Many of the details were cast in epoxy using RTV molds. Most of the patterns were made from polystyrene. The rear apse and the ceiling are polyester layups on wooden molds. The shingles are a red flexible polyester on one layer of fine fiberglass cloth." Ray sawed the shingles from the sheets.

The outer case was made from 4.5 mm birch-faced, mahogany-core plywood because it is stable and takes an excellent finish with little effort. "The gray marble molding," Ray said, "was made from basswood for the exterior and the softer jelutong for the interior. The molding was made using a Record multiplane, a modern version of the old Stanley molding plane. It has 36 different blades so practically any molding shape can be duplicated by hand. A precision Inca table saw was used for the jointing. The arched front molding was first cut in narrow circumferential strips using a Hegner jigsaw, then the

individual pieces were cut to the proper shape and glued back together."

Ray explained that he used Humbrol paints "because the colors in boxed dioramas must be dead flat. Rose gold and Testor silver were used. A satin varnish was applied to the simulated marble surfaces. All wood components were primed with gray auto lacquer. The three 4-watt fluorescent tubes were tinted with acrylics."

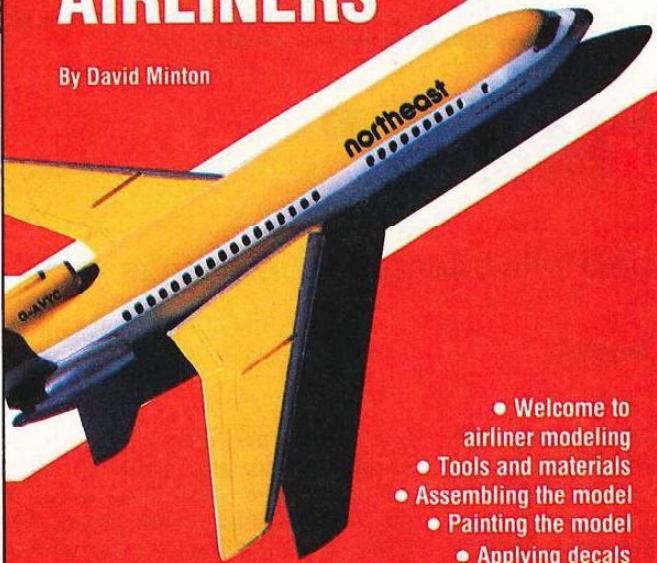
Ray has been a full-time modeler since 1972; most of his boxed dioramas depict the early American West. He is a Grand Master of the Miniature Figure Collectors of America. **FSM**

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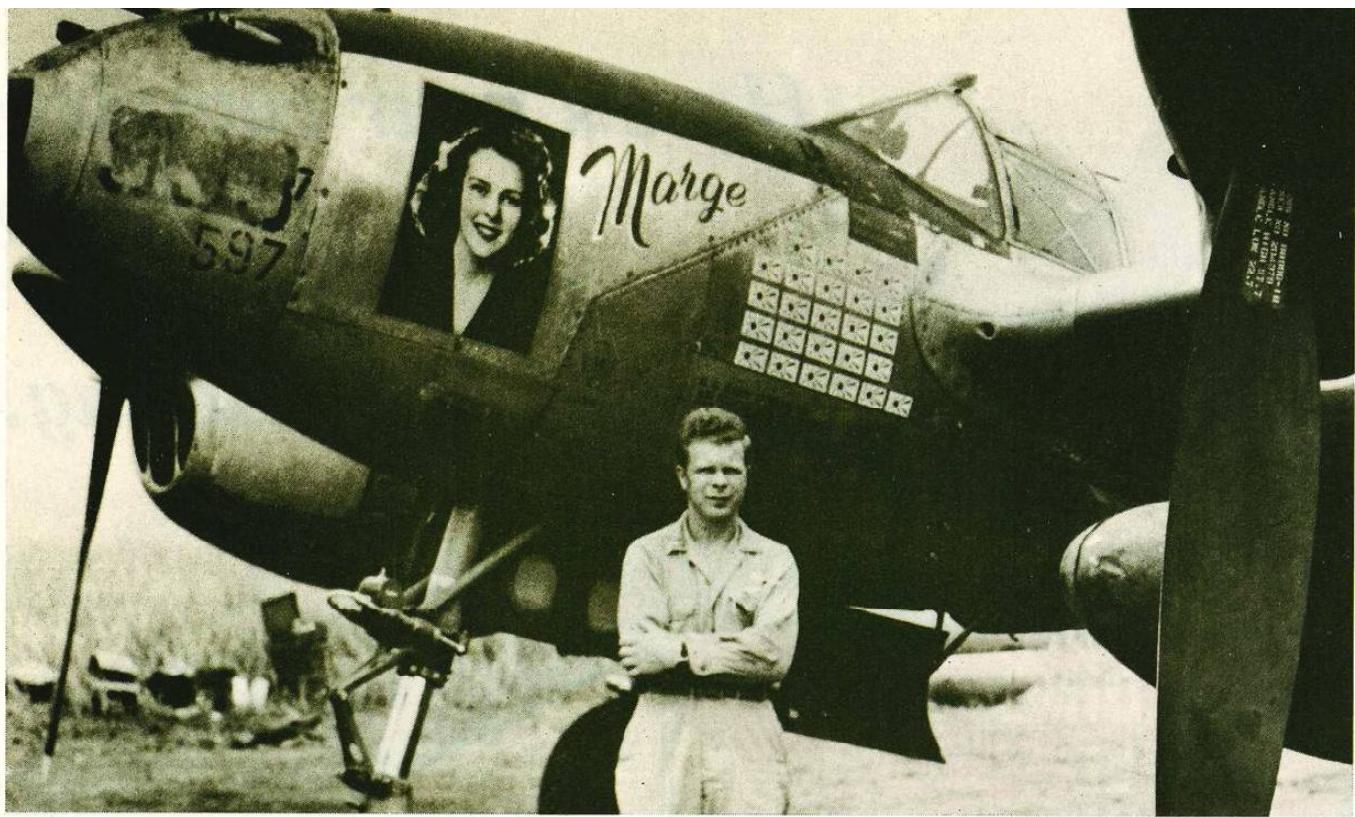
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Jim Bong collection

Richard Bong beside "Marge." Note the painted-over numbers on the nose, victory flag tally, and lack of blade antenna. Shortly after this photo was taken "Marge" was wrecked. Bong went on to score 40 victories — highest score by an American ace.

Modeling "Marge"

A 1/32 scale P-38 presentation model with very special markings

BY PAUL BOYER

WHEN WORLD WAR TWO aviation hero Richard I. Bong left the South Pacific Theater December 29, 1944, he was the top American ace — with 40 victories over Japanese aircraft. By the end of the war no other American fighter pilot could match his score. For his heroics, Bong received the Congressional Medal of Honor.

After returning stateside, Bong married his sweetheart, Marge, on February 10, 1945, and was assigned to help test the new Lockheed P-80 Shooting Star, the first U. S. jet fighter to see squadron service. Ironically, after surviving two years of air-to-air combat, Bong died when his P-80 flamed out on takeoff from Burbank, California, on August 6, 1945.

Our local chapter of the International Plastic Modelers Society in Milwaukee, Wisconsin, is named for Richard Bong. At one of the club's monthly meetings Richard's brother Jim spoke and showed photos and movie footage

of the famous ace. Afterward, club members asked me to build a model to be presented to Jim at the club's annual banquet.

The job appeared easy since Richard Bong's P-38, "Marge," is familiar to most modelers who build WWII aircraft. The members of the chapter and I agreed that the Revell 1/32 scale P-38 would make the most impressive replica for the presentation, and the first release of this kit contained markings for "Marge."

Modifying the kit. There were only two slight changes made to the kit; the spoked nosewheel was changed to a solid disc wheel visible in the photos of the actual aircraft by filling between the spokes with gap-filling super glue and sanding it smooth. The only other difference I could find was that Bong's plane did not have a blade antenna under the nose.

I built the rest of the kit out of the box. Since the model was to be mounted

to a base by its landing gear, I reinforced the main gear struts by adding gap-filling super glue fillets at all the intersections of struts and braces. This stiffened the landing gear considerably without requiring wire reinforcements.

Improving the markings. Checking through my book collection and photos borrowed from Jim Bong, I discovered that the serial number in the kit decals (and several other custom decal sheets in other scales) was incorrect. The data block, visible in a closeup photo of "Marge," revealed that this was P-38J-15-LO, A. A. F. Serial Number 42-103993, not 42-104380.

The most distinctive marking on the plane wasn't painted on. In 1944 Richard had a small photo of his fiancée, Marge, blown up, tinted, and pasted on the left side of the plane's nose. Many photos of this aircraft were taken for publicity purposes, some with Bong and a crew chief around the nose. All photos of "Marge" show 25 miniature

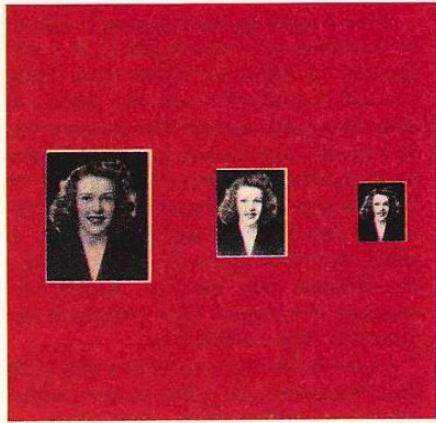
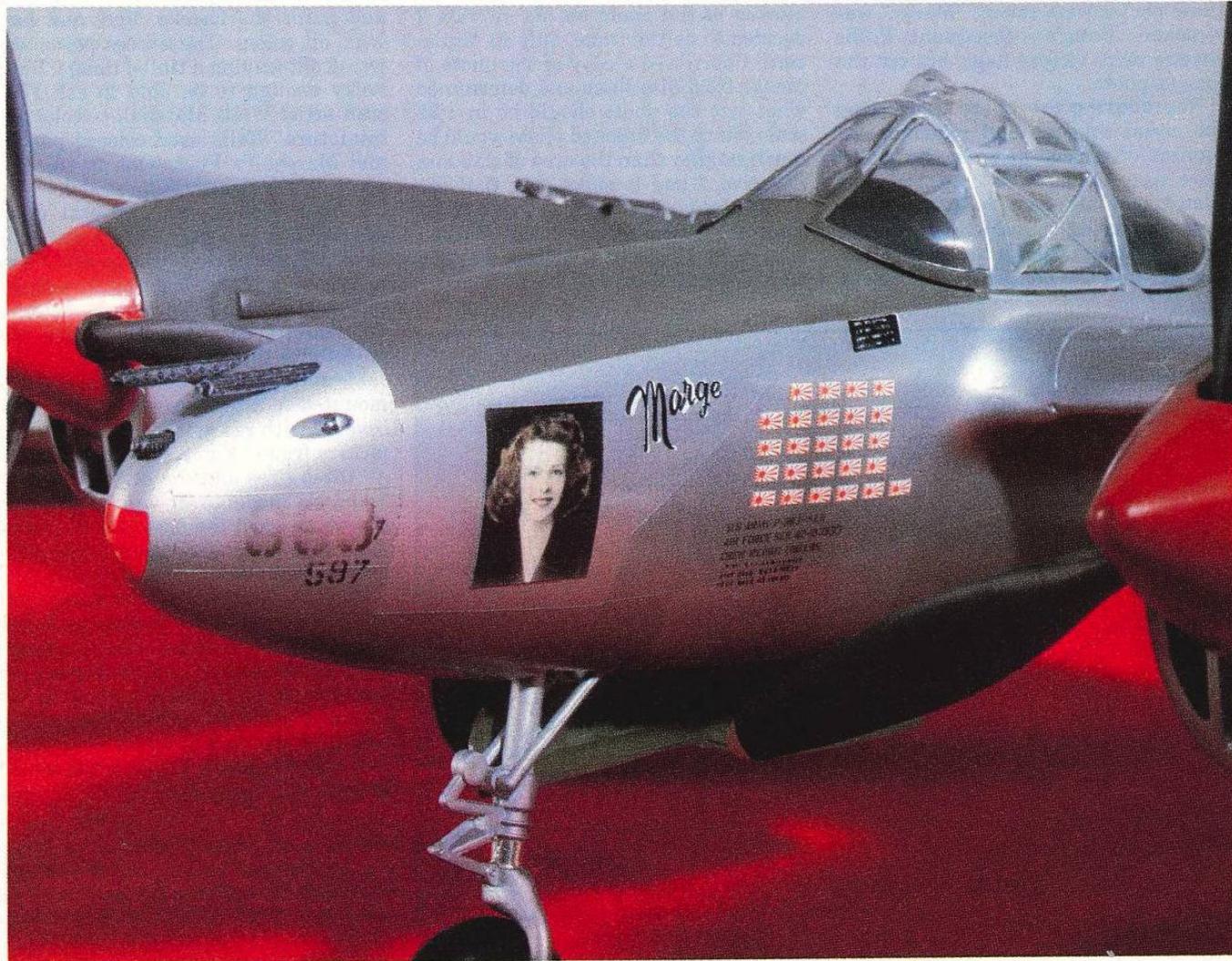


Fig. 1. These reductions of Marge's tinted portrait are (left to right) 1/32, 1/48, and 1/72 scales.

(Right) Revell's 1/32 scale P-38 in Richard Bong's markings is mounted on a velvet-covered acrylic base inside a picture frame. The photo of Marge was used to make the miniature on the model. (Below) This closeup shows Richard Bong's personal markings. Note the tinted miniature photo cemented to the nose of the model. The victory flag tally was reduced to 25 to agree with photos of the actual aircraft.



All photos, FINESCALE MODELER: Paul A. Erler unless otherwise credited.





Jim Bong collection

Major Richard Bong in "class A" uniform with the Congressional Medal of Honor around his neck. Other decorations include the Distinguished Flying Cross with 6 oak leaf clusters (repeat awards), and the Air Medal with 12 oak leaf clusters.

Japanese flags, victories Bong scored flying many P-38s, but shortly after these photos were taken, "Marge" was wrecked. Bong's subsequent P-38s showed more victory flags, but not the famous photo.

Reproducing the photo. Correcting the serial number and reducing the number of victory flags on the model were easy changes (I used numbers from Microscale sheet No. 72-25). However, producing a realistic miniature photo of Marge presented a problem. The decal of the photo included in the



Fig. 2. The size of the image was measured by projecting it on a frosted flexible ruler before film was loaded in the camera.

Revell kit was a crude, high-contrast black-and-white reproduction not up to the quality of the rest of the model. But, how could I improve on it?

Since Richard Bong had pasted a blowup of the photo on his aircraft, I decided to do the same, only in miniature. I borrowed a copy of the photo of Marge from Jim Bong and determined what size the photo should be in 1/32 scale. Since the finished photo would be much smaller than the area of a 35 mm negative, I had to shoot it so that the image size on the negative was exactly the size I needed for the model. While I was at it, I figured the sizes for 1/48 and 1/72 scales too, Fig. 1.

Before loading the camera, I placed it on a tripod, pinned the photo to a wall, and set up lights on either side. Then I opened the shutter, set the maximum aperture, and opened the camera back so I could view the image on a flexible, frosted, see-through ruler, Fig. 2. I varied the size of the image for the different scales by moving the camera toward and away from the picture. Once I established the correct distances, I marked the tripod legs' positions with pieces of tape on the floor.

I loaded the camera with a roll of Kodak Panatomic-X, a fine-grain, ASA 32 black-and-white film, and shot the photos. I had the film processed and contact (same size) prints made on lightweight, matte-surface enlarging paper (Kodak Polyfiber A). The lightweight paper is thin, exactly what I wanted for the tiny images; standard-weight paper would have been too thick.

When Richard Bong wrote home to tell his folks about the picture mounted on his plane, he mentioned that he had had it tinted. Color film was still a rarity in the 1940s, so the custom was to have black-and-white portraits "gold-toned" to produce pleasing skin tones and paint the cheeks, lips, and hair with oil colors. The excess paint was wiped off, leaving a tinted image. I was lucky enough to be able to ask FSM staff artist Wells Marshall to color the miniature. Wells used colored pencils and Marshall's Photo-Oils to tint the photo on the presentation model.

I experimented with several glues and decided on a gap-filling super glue to attach the photo to the model. I had to do this carefully; if the photo went on cockeyed it would have to be scraped off, ruining both the photo and the model's finish.

Mounting the model. The model was mounted to a $\frac{3}{16}$ " base of clear acrylic covered with red velvet and placed in a picture frame, Fig. 3. I drilled holes in all three tires and the acrylic and fastened the model by driving small wood screws through the base into the tires. A drop of super glue in each tire reinforced the mount.

I had an engraved plaque made to fit into the corner of the frame and fellow Bong chapter member Dennis Moore built a clear acrylic cover to protect the finished model. Despite borrowing his photos, I managed to keep the presentation at the club banquet a surprise, and Jim Bong now displays the model in his living room.

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I would like to thank Al Jones for donating the kit and assembling the materials for the display base, Dennis Moore for building the acrylic cover, and of course, Jim Bong for the loan of his photos and memories.

P. B.

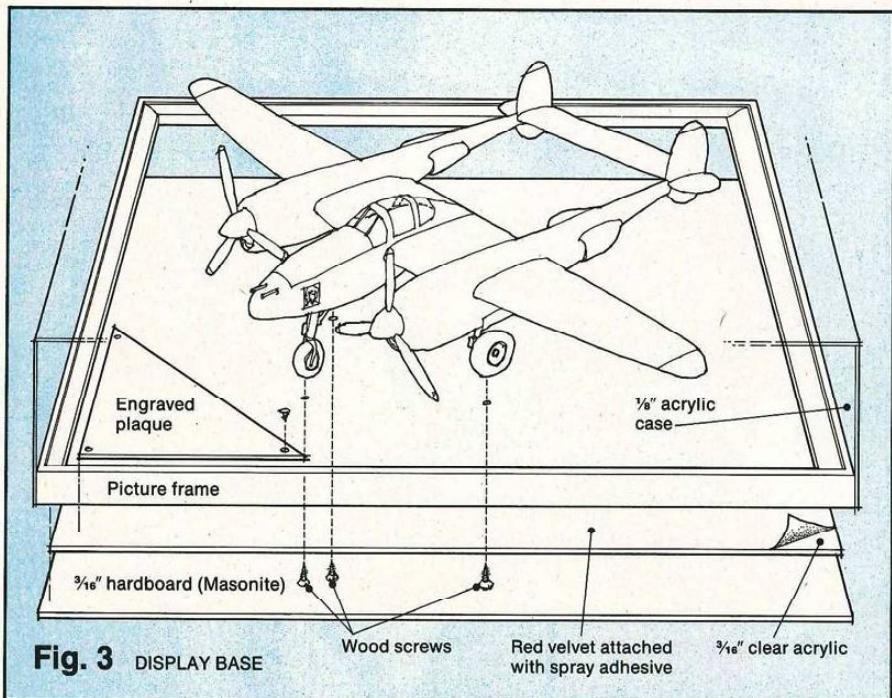


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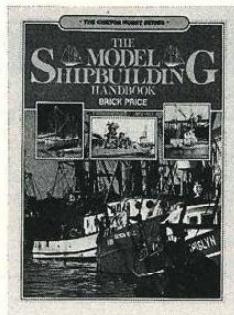
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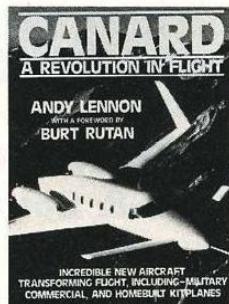


The Model Shipbuilding Handbook

Brick Price, a professional modeler for more than 20 years, is the author of this 187-page, 7" x 9", soft-cover book that is a beginner's guide to building plastic and wooden ship models from scratch and from kits. There are 77 photos (18 in color) and 160 sketches. The topics covered include choosing tools, assembling and modifying kits, painting, detailing, and displaying completed models.

Throughout, Price advocates using whichever materials and techniques will produce a desired effect most easily at the lowest cost. For example, he reports good results casting figures and small parts with ordinary 60/40 bar solder, which is sold by most hardware and plumbing supply stores.

The book is published by Chilton Book Company, Radnor, PA 19089; the price is \$12.95.



Canard: A Revolution in Flight

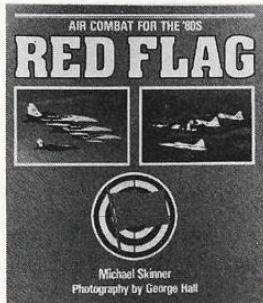
A canard aircraft has lifting surfaces in front of the main wing; these prevent the main wing from stalling. The 1903 Wright Flyer was a canard, as are the new Beech Starship I, the OMAC-1, and many others, including Burt Rutan's series of homebuilts ranging from the Vari-Viggen through the Model 72 Grizzly.

In this 200-page, soft-cover, 7 3/8" x 9 1/4" book with 74 black-and-white photos and 200 drawings (many of which are aircraft three-views), author Andy Lennon provides a history of canard designs of all nations from 1903 to the present and explains why he believes many future aircraft, including

fighters and large airliners, will be canards. The book is published by Aviation Publishers, 1 Ultralight Way, P. O. Box 234, Hummelstown, PA 17036; the price is \$17.95.

Red Flag

Journalist Michael Skinner and photographer George Hall teamed up to produce



this study of modern air combat training, primarily the Red Flag exercises conducted by the USAF's Tactical Air Command at Nellis AFB, Nevada. It is an 8" x 8 1/4", 134-page, soft-cover book with 115 photos (20 in color). The breezy text tells why Red Flag was instituted and how it is carried out.

The book is published by Presidio Press, 31 Pamaron Way, Novato, CA 94947; the price is \$10.95.



380th BOMB GROUP
1942-1945

King of the Heavies 380th Bomb Group, 1942-1945

The 380th Bombardment Group was activated in November 1942 and trained at Biggs Field, El Paso, Texas, and Lowry Field, Denver, Colorado, before moving to bases near Darwin, Northern Territory, Australia, in 1943. From June 1943 until January 1945 the 380th was assigned to the Australian Defense Command and worked directly under the RAAF. The group's B-24s flew missions in New Guinea and the East Indies as far distant as Balikpapan, Borneo. In January 1945 the 380th moved to Mindoro in the Philippines and ended the war stationed on Okinawa.

This 184-page, 8 1/4" x 11 1/4", hard-cover book is by Glenn R. Horton, Jr., and Gary L. Horton, whose father served with the 380th. There are 531 photos (21 in color), including many photos of aircraft nose art. The text includes a history of the group's operations as well as a list of aircraft serial numbers and a capsule history of each plane.

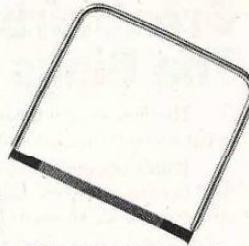
The book is available from Glenn R. Horton, Jr., Book Purchase, 5520 West 133rd Street, Savage, MN 55378; the price is \$32.50 which includes postage.

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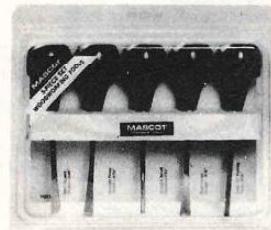
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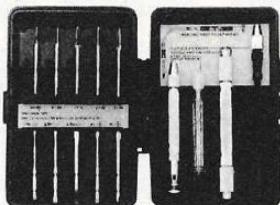
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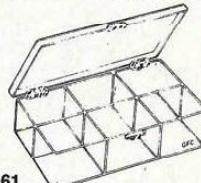
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VIDEOTAPE BRIEFS



Threshold: The Blue Angels Experience

Produced as a color movie in the early 1970s by Paul Marlow and now available as a videocassette, this is an 89-minute examination of the U. S. Navy's Blue Angels aerobatic team and its F-4J Phantom IIs during the 1970 season. It concentrates on the team's performances that year at Mechanicsburg, Pennsylvania; Honolulu, Hawaii; and Quito, Ecuador. Much of the footage was shot by cameras mounted on the F-4s.

The 1970 team consisted of Harley Hall, Kevin O'Hara, Jim Maslowski, Ernie Christensen, Steve Shoemaker, and Skip Umstead. The men are shown to be superb individual aviators, as when each pilot's Phantom teeters on the brink of a stall during aerial refueling over the Pacific, and as ultra-disciplined formation fliers, as when they hold their planes within inches of each other while performing high-speed maneuvers.

The tape is available in either VHS or

Beta format for \$85.00 from Motorbooks International, P. O. Box 2, Osceola, WI 54020; place phone orders through (800) 826-6600.

B-58 Video Festival

The General Dynamics B-58 Hustler strategic bomber was the hottest plane ever flown by the Strategic Air Command. This 96-minute cassette is a collection of five color films made in the late 1950s and early 1960s: "B-58 Bendix Trophy Race," "Champion of Champions," "Tall Man 5-5," "B-58 Low Altitude Bombing," and "B-58 Bleriot Trophy."

The Bendix film recounts a B-58 flight from Los Angeles to New York and return in 4 hours, 41 minutes, and 14.9 seconds on March 6, 1962, during which the B-58 won the Bendix Trophy.

In "Champion of Champions" Jimmy Stewart tells how the B-58 set several speed and altitude records — this film also includes shots of the B-58 flying supersonically at 500 feet.

Chet Huntley is the narrator in "Tall Man 5-5," the story of a mock bombing mission.

In "B-58 Low Altitude Bombing" a pre-production B-58 flies from Texas to California at about 200 feet and Mach .92 to demonstrate the plane's capabilities.

Finally, "B-58 Bleriot Trophy" shows how a B-58 won the Bleriot Trophy by flying at 2,000 kilometers per hour (1,240 mph) for 30 minutes.

The cassette is available in VHS or Beta from Historic Aviation, 3850 Coronation Road, Eagan, MN 55122; the price is \$69.95 plus \$3.00 postage. Phone orders may be placed through (800) 225-5575. **FSM**



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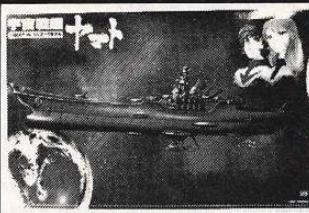
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**5TH NEW YORK VOLUNTEER INFANTRY
 REGIMENT (DURYÉE'S ZOUAVES),
 UNION ARMY, CIVIL WAR, 1861**

**BY R. J. STAFFORD
 ARTWORK BY THE AUTHOR**

ALTHOUGH JOKERS DESCRIBED a Zouave as "an Irishman and six yards of red flannel," the exotic Zouave uniform was greatly admired at the outbreak of the Civil War. Based on Oriental uniforms worn by the French foreign legion, it was popularized largely through the efforts of Elmer E. Ellsworth's U. S. Zouave Cadets, an unbeatable Chicago drill team that toured the eastern U. S. in 1860.

The 5th New York was mustered into service in May 1861 for a two-year enlistment. Assigned to the Fifth Corps under Abram Duryée, the regiment quickly won the admiration of other units when at Gaines' Mill (June 27, 1862) the Zouaves realigned ranks under heavy fire. The unit also saw service at Second Bull Run (August 29 and 30, 1862). In May 1863 most of the regiment's enlistment ran out, but three-year enlistees were transferred to the 146th New York Volunteers. Later, another 5th New York regiment was raised, rejoined the Fifth Corps, and served to the end of the war.

The enlisted uniform is on the right. The fez was maroon felt with a gold tassel; for parades it was wrapped with a white turban and white gloves were worn. The shirt and wool jacket were standard union blue with red lace. All ranks wore black leather belting, and sergeants wore a crimson sash. White spats with leather protectors were worn over the calves. Most Union infantrymen wore a 2"-wide waist belt with an oval buckle, but the 5th New York had a square buckle. A black, heavy leather cartridge box 8 1/2" wide, 7" high, and 2" deep was worn on the waist belt. The box included a brass oval buckle with the letters "U. S." on the outside flap. The 5th New York was armed with the M1862 Remington Zouave musket with the standard 18" bayonet.

Officers (center) wore modified Zouave dress. Instead of the baggy red pants worn by the ranks, the trousers were cut down and cuffless. A short jacket similar to the cavalry type was substituted for the standard frock coat shown here. The dress coat also had Confederate-style braid around the cuffs. The red kepi was trimmed with gold braid. The officer's sword shown here is a presentation model.

The drummer, about 16 years old, wears the enlisted uniform. Normal routine was for children to serve as drummer boys, and it was not unusual for a 14-year-old to be a seasoned veteran. The facing on the drum is a common variety used during the war by federal troops.

As the war continued items were modified for comfort and according to available supplies, but when the regiment was mustered out, all were in the standard Zouave uniform. The 5th New York's honor guard must have been impressive — only the tallest men, all of them over 6 feet, were accepted.

FSM

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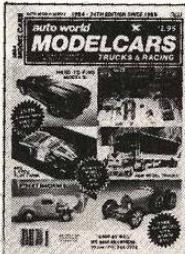
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Alan Ernat

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Mark Savage

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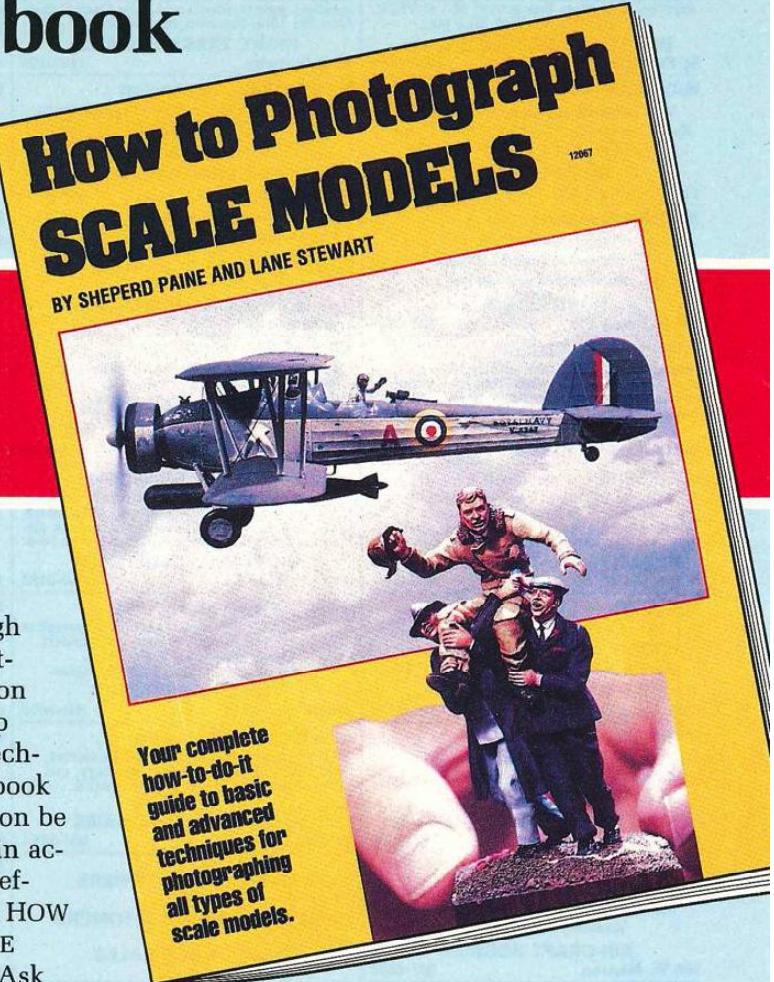
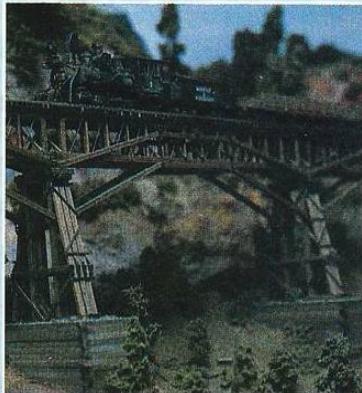
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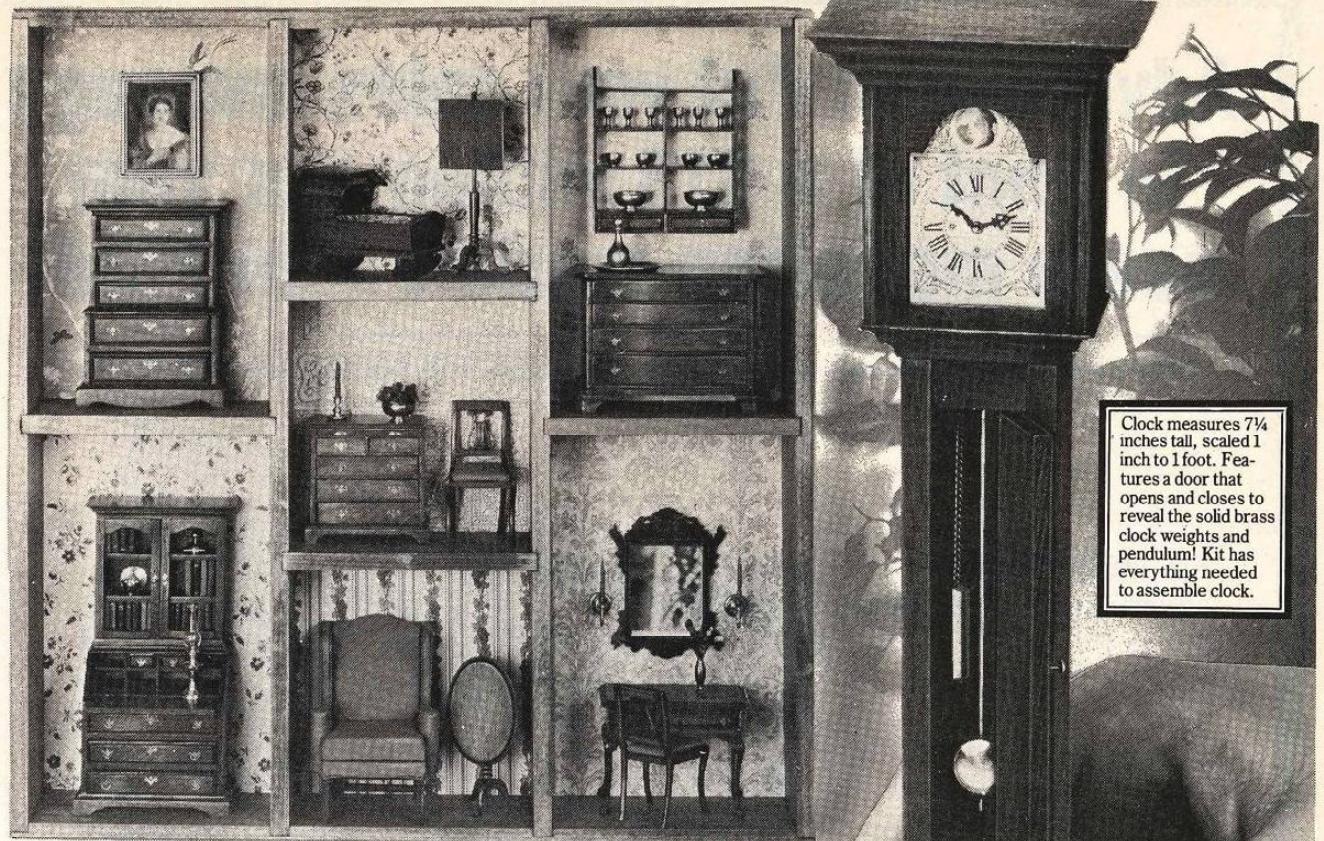
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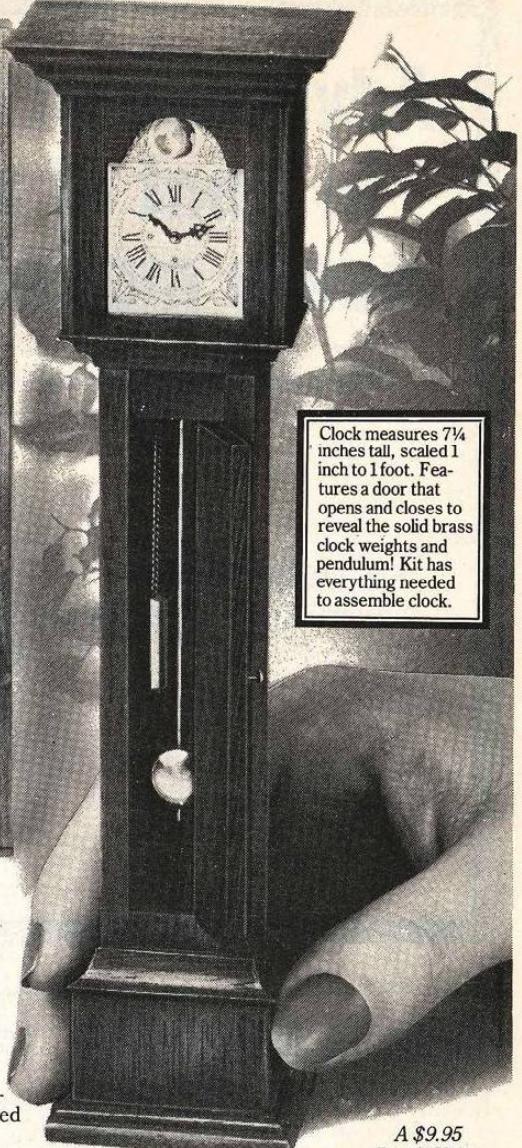
Each House of Miniatures kit is precision-scaled to 1/12 of the full-size original and cut to exact specifications. Only furniture-quality hardwood is used, and fittings and hardware are of solid brass—finished to fit perfectly.

Kits include detailed step-by-step instructions. No special tools or skills are required for assembly.

Begin your collecting adventure with our miniature reproduction of the William & Mary clock kit for only \$1 when you become a trial member of The House of Miniatures Collectors Society.

As a trial member, you will have the opportunity to purchase, *if you wish*, other museum quality miniature kits. However, you are not obligated to buy any additional kits—ever!

Remember, this William & Mary clock kit is available for \$1 by mail only. *With no further obligation on your part.* Mail coupon today!

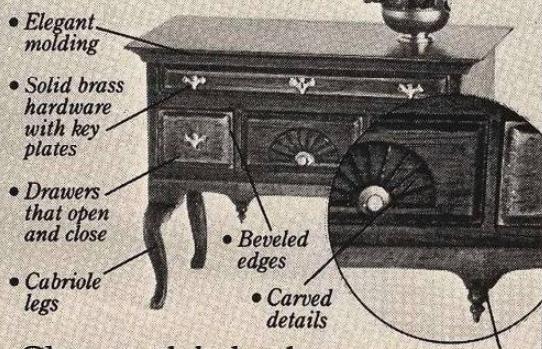


A \$9.95
Retail Value

Take this
museum quality
William & Mary
Clock Kit for only \$1*
with no further obligation

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Each kit has fine details



Chippendale lowboy

THE HOUSE OF MINIATURES

Division of Craftmark Inc., 80 Newbridge Road, Bergenfield, NJ 07621

Please enroll me as a trial member of the Society and send me the William & Mary clock kit. Bill me only \$1* If I am not completely satisfied, I may refuse delivery of the second shipment by writing "cancel me" on the shipping label. If I keep the second shipment, I will be a regular member and receive additional shipments every four weeks. Prices for each shipment, which will contain one or two kits, are \$9.95* or less. I may return any shipment and I am not obligated to accept any minimum number.

BR17

Mr. Mrs.

Ms. Miss

All enrollments are subject to acceptance.

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*Plus shipping, handling and sales tax.

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THE PERFECT FINISH

It's easy too!

In the past, hobbyists attempting to create accurately finished automobiles were forced to use expensive, full-scale auto lacquers and bothersome surface prep procedures. (Lacquers tend to craze polystyrene, hence the need for careful priming.)

Model Master Professional Paints for Cars and Trucks solve both problems. Economical half-ounce bottles and 3.2 ounce spray cans provide the right amount of paint for most modeling projects. And because Model Master paints were developed for polystyrene application, no special preparation is required.

Model Master auto paints are unique because they are semi-transparent metallic pearlescents.

This formulation allows the builder to create deep, rich, lustrous finishes. Two or three color coats followed by a couple of high-gloss clear coats produce results that are no less than spectacular!

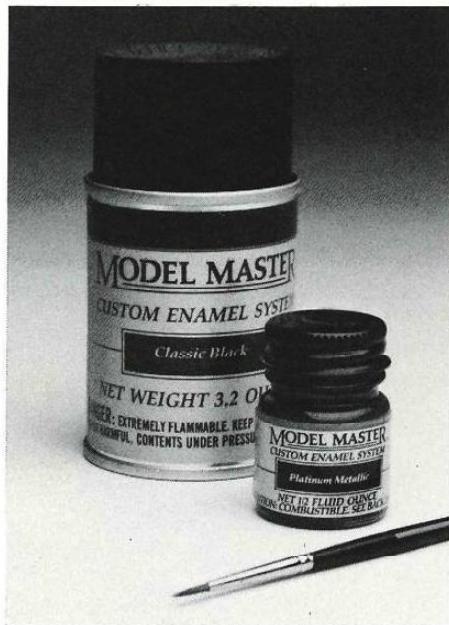
The colors were selected after Testor designers carefully scanned auto manufacturers color chip books from around the world, and located the most popular, up-to-date paint schemes. Engine enamels, primers, clear gloss, and detailing colors like

Turn Signal Amber have been included also.

What's more, by experimenting with primers, the builder can develop custom finishes. For matching standard colors, Testor suggests two color coats over gray primer. By using gold or silver primer, for example, and varying the number of color applications, truly original finish work can be achieved.

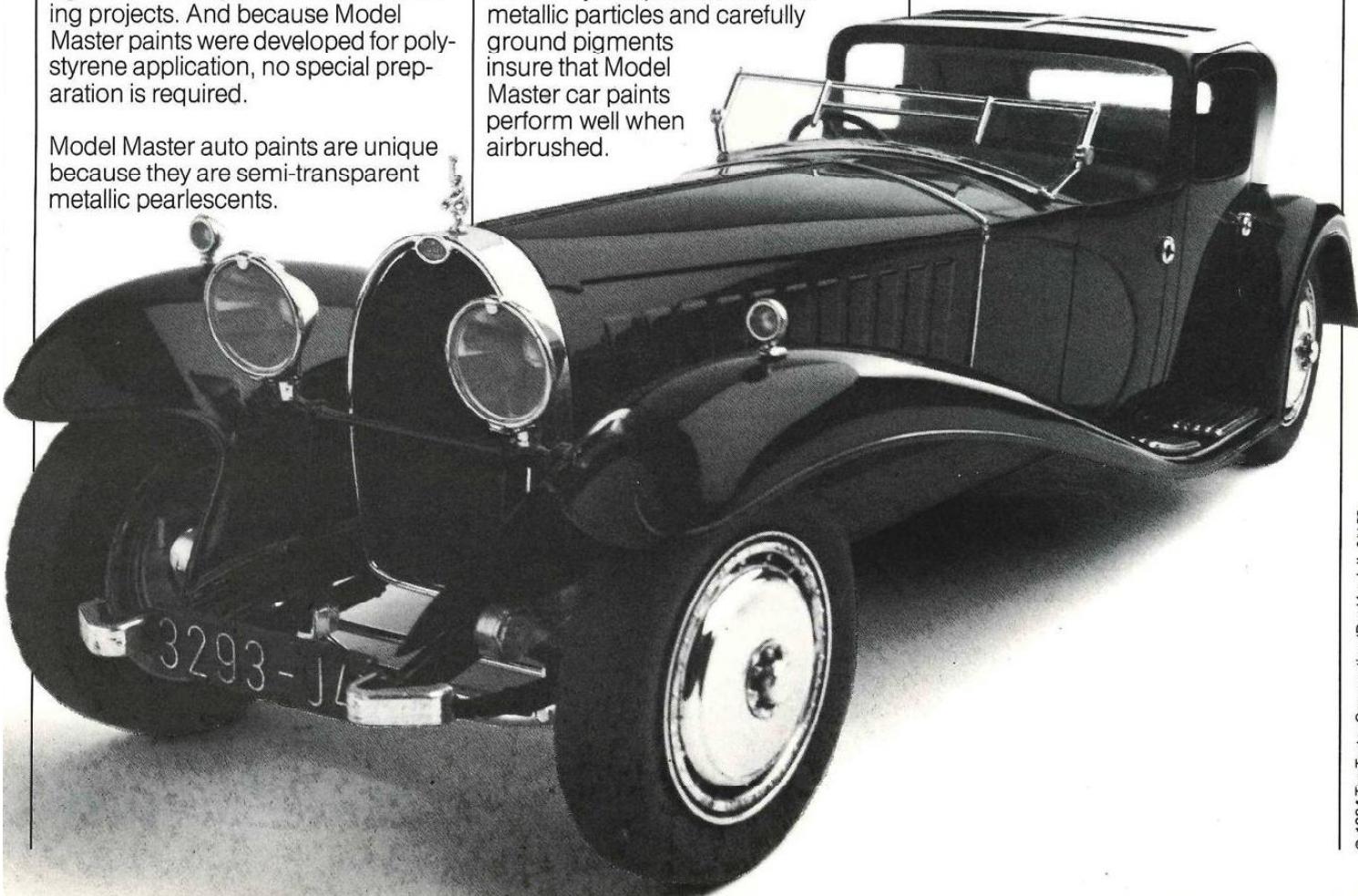
Like other Testor and Model Master coatings, these new colors are recommended for airbrush application. Extremely fine pearlescent and metallic particles and carefully ground pigments insure that Model Master car paints perform well when airbrushed.

Introducing Model Master Professional Paints for Model Cars and Trucks.



In addition, the Model Master finishing system includes precision tools. Natural fiber brushes from 000 to $\frac{1}{2}$ " sanding films, cementing tips, and No. 11 refill blades all reflect the high standards set by Model Master paints.

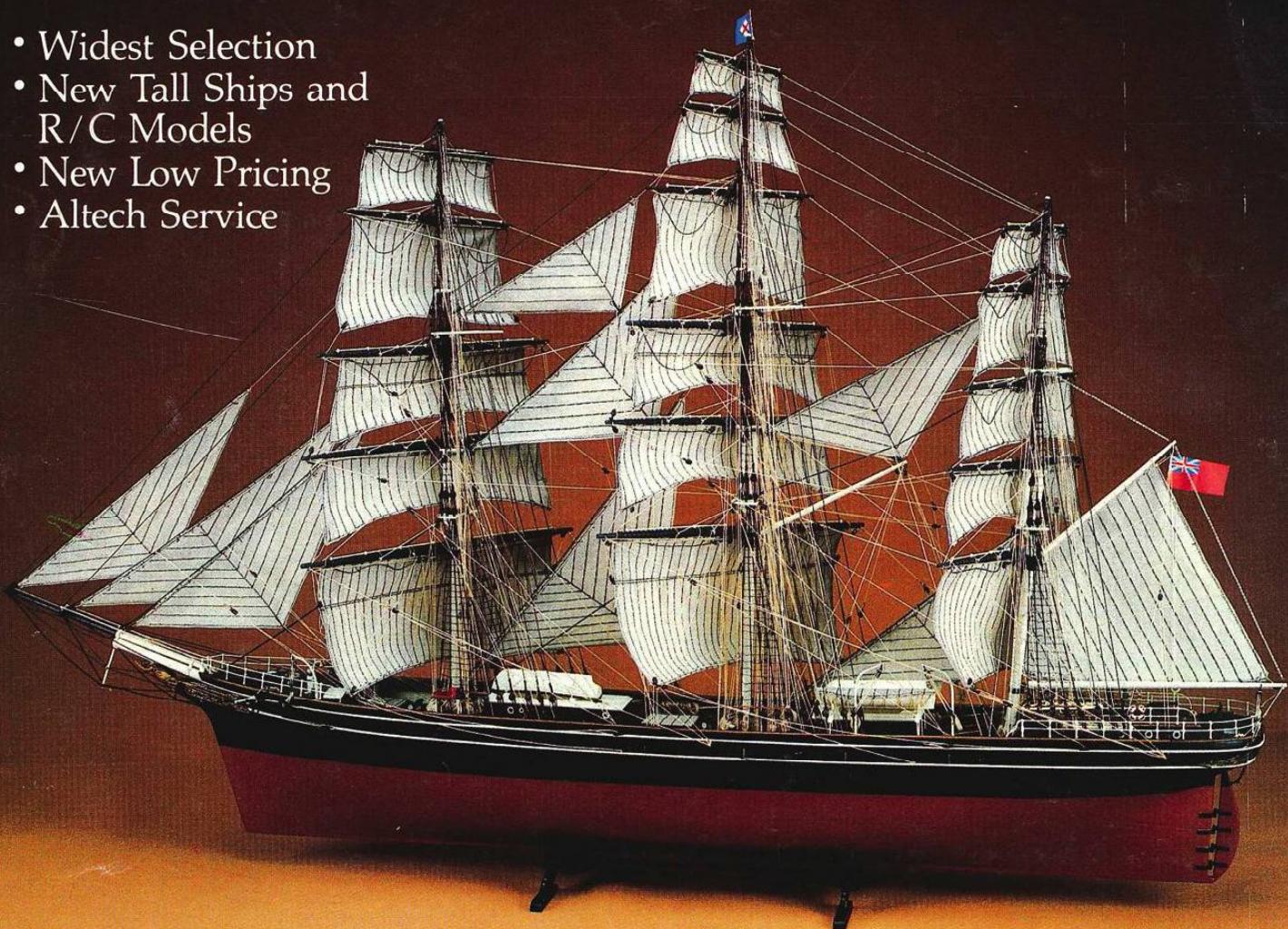
TESTORS



Now there are even more reasons to build billing boats



- Widest Selection
- New Tall Ships and R/C Models
- New Low Pricing
- Altech Service



To anyone who has ever built a detailed model boat kit, the name Billing is boats. Billing is world renowned quality and craftsmanship. Billing is incredible detail. Now the old world, Danish craftsmen at Billing Boats have joined with Altech Marketing to add still more excitement to the world's most respected reproductions, including broader selection, new low pricing and complete inventory and service.

NEW SELECTION AND NEW PRICING

Billing now lets you choose from a huge array of wood display models like the HMS Bounty and the Cutty Sark shown here; or exquisitely detailed R/C kits including Jacques Cousteau's Calypso; and even beginner plastic hulled models. No one offers more of a choice...or better value.

There are 40 in all, each a masterpiece. Every one begins with original blueprints,

or with detailed inspections of the salvaged prototype. Many of the kits are approved by and developed in close cooperation with museums and shipyards around the world.

A BILLING MODEL IS WORTH THE TIME

A close look at the 1/75 scale Cutty Sark will tell you why there's no greater satisfaction than building a Billing Boat. The kit itself was developed from original drawings from the British Museum in London. The Cutty Sark, along with its fitting kit, is complete with cloth sails, rigging thread, chain, winches, pulleys, railings, wood planking, strips or dowels and more...most are in perfect scale.

This kit begins with high quality wood, the best you can buy. The optional fittings kit itself has about 1100 parts. Many are turned brass, because Billings knows realism can't be achieved with plastic. The

precision replication is heightened by the wooden decking and realistic sails.

When you're finished building this clipper ship, you'll own a display piece you can treasure for a lifetime. Also available in the tall ships, all wood series is the Santa Maria, the Bluenose, and the legendary HMS Bounty.

Whether you're into R/C or just building for display, you'll find there are now more ways and reasons than ever to build a magnificent Billing Boat. Ask your hobby dealer to show you the full catalog.

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